

# Experiencing the Mind when the Brain is Fed Correctly: Analysis of Two Patient Cases Comparing the Therapeutic Effects of Risperdal to Orthomolecular Treatments for Schizophrenia

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**Abstract** *The primary treatment of schizophrenia for the past 60 has been pharmaceutical drugs, which are developed and prescribed within a paradigm that considers schizophrenia an incurable condition. The orthomolecular approach to treating schizophrenia, which involves especially high doses of vitamin B<sub>3</sub>, emerged with similar timing, but under different principles. Many experiments using vitamin B<sub>3</sub>, also known as niacin, have shown with statistical and clinical significance that high doses can bring about recovery from schizophrenia without adverse effects. This report is a condensed version of a dissertation study that employed a multiple case design to explore the experience of individuals who switched from using the drug Risperdal to orthomolecular medicine as their primary biological treatment for schizophrenia. Interview data from individuals diagnosed with schizophrenia combined with those of observers and healthcare providers who knew the individuals throughout the course of diagnosis and different treatments revealed: Risperdal devastated participants' energy, motivation, concentration, memory, social functioning, and capacities for reading and writing; psychiatrists were perceived as unsupportive and at times hostile; the orthomolecular treatment supported significant recoveries from schizophrenia, enabled participants to reduce or cease Risperdal usage without experiencing withdrawal symptoms, and improved participants' cognition, emotional stability, and social functioning.*

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## Introduction

The concept of schizophrenia is accepted almost universally, and approximately one percent of the population has been diagnosed as having schizophrenia.<sup>1</sup> Yet controversy swirls about how to best define and diagnose it, and the “boundaries of the concept of schizophrenia have expanded and contracted over time...making previous research difficult to interpret.”<sup>2</sup> Currently, schizophrenia is con-

sidered a psychotic disorder with signs and symptoms that fall into positive and negative categories, referring to an excess or diminution of regular functioning, respectively.

Positive symptoms can be further categorized as psychotic and disorganized. Psychotic symptoms include delusions, “erroneous beliefs that usually involve a misinterpretation of perceptions or experiences”<sup>3</sup> and hallucinations, perception in the absence

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of an apparent stimulus, which can be experienced through any of the senses but are most commonly auditory. Disorganized symptoms involve speech and behavior. Disorganized speech is speaking incoherently using words that do not relate; it is an expression of muddled thinking. Disorganized behavior can manifest in a variety of ways, “ranging from childlike silliness to unpredictable agitation.”<sup>4</sup> Negative symptoms are comprised of affective flattening, avolition, and alogia. Affective flattening is a restricted capacity for the range and intensity of emotional expression. Alogia is a gross restriction in the fluency and productivity of thinking and speaking. Avolition refers to a restriction of the ability to initiate goal-directed behavior. The variations of schizophrenia are highly disruptive, impairing virtually all areas of the affected person’s life, can lead to suicide,<sup>5</sup> devastate families, and cost society.<sup>6</sup>

Numerous approaches are taken for treating schizophrenia; among the most popular is the prescription of antipsychotic drugs, many of which produce severe adverse effects;<sup>7-12</sup> are linked to an incentive for monetary profit benefiting pharmaceutical corporations;<sup>13-16</sup> lack sufficient evidence for safety and efficacy;<sup>17</sup> and have been grossly misused.<sup>18-21</sup> Orthomolecular medicine offers another approach to treating schizophrenia involving the optimal doses of vitamin B<sub>3</sub>—also known as niacin (or nicotinic acid), niacinamide (or nicotinamide)—in conjunction with a particular protocol of vitamins.

The orthomolecular treatment for schizophrenia is typically overlooked, which is disconcerting because historical evidence, although mixed, suggests it may be valuable and has the added advantage, in contrast to pharmaceuticals, of mild to no adverse effects.<sup>22-29</sup> The idea to treat schizophrenia with vitamins is founded on the principles of orthomolecular medicine, which contends that many, if not all, illnesses derive from a deficiency of some necessary and naturally occurring biochemical constituent. Thus, the orthomolecular approach involves treating “mental disease by the provision of the optimum molecular environment for the mind, especially the op-

timum concentrations of substances normally present in the human body.”<sup>30</sup>

A variety of hypothetical etiologies of schizophrenia have been articulated, with biological, psychological, or sociological orientations. The dopamine hypothesis of schizophrenia is most popular within orthodox psychiatry, and it underlies psychiatric drug development and usage. The pharmaceutical drugs used to treat schizophrenia are popularly referred to as antipsychotics but will now be referred to by the technical term, neuroleptic, meaning to seize the nerve.

The dopamine hypothesis contends that schizophrenia is caused by a biochemical imbalance in the brain involving dopamine, a molecular compound present in the body as a neurotransmitter with many important functions. The hypothesis was posited after psychiatrist Henri Laborit administered chlorpromazine, originally used as an anesthetic, to sailors whom he deemed schizophrenic in the early 1950s. The sailors’ symptoms disappeared, yet they maintained a degree of cognizance, so Laborit and other psychiatrists inferred that the drug had cured the sailors’ schizophrenia, and that if the physiological mechanism of chlorpromazine could be found, the cause of schizophrenia would be uncovered.

Carlsson and Lindqvist conducted a study on the effect chlorpromazine had on the brains of mice and found that the drug inhibited dopamine production, which led the researchers to formally declare that schizophrenia was caused by excess dopamine.<sup>31</sup> Then, clinical trials were done using chlorpromazine and other dopamine inhibiting drugs on humans.<sup>32</sup> The drug reduced schizophrenic symptoms, which appeared to confirm the hypothesis that schizophrenia was caused by excess dopamine. The dopamine hypothesis has become more sophisticated and has been explained in more detail.<sup>33</sup> Yet, the theory took hold of popular belief early in its formulation, largely due to the advertising practices of drug companies, and every drug developed to treat schizophrenia throughout the following decades has been designed to block dopamine receptors.

In 1954, Hoffer, Osmond, and Smythies

posited that schizophrenia was caused or aggravated by excess amounts of adrenochrome and/or adrenolutin, both oxidized derivatives of adrenaline. They suggested:

In schizophrenics too much adrenochrome was formed, that it reacted in the body by producing perceptual and thought disorder changes, that it was the schizophrenic endogenous hallucinogen or more accurately the endogenous schizogen. The presence of this aberrant biochemical system would account for many of the physiological and biochemical findings present in many schizophrenic patients if not in all.<sup>34</sup>

They postulated the chemical process as well. The non-toxic derivative of adrenochrome is leukoadrenochrome and the toxic derivative is adrenolutin. Any reaction diverting adrenochrome into adrenolutin rather than into leukoadrenochrome could cause or aggravate schizophrenia. Adrenochrome is diverted into adrenolutin in the absence of a methyl acceptor during transmethylation, the process whereby hydrocarbon bonds (methyl groups) are transferred from one compound to another. Hoffer, Osmond, and Smythies supposed that vitamin B<sub>3</sub>, a potent methyl acceptor, could protect against the formation of adrenolutin by decreasing the formation of adrenochrome in the brain.

Vitamin B<sub>3</sub> is in one of eight compounds known as the B-complex vitamins (B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub>, B<sub>6</sub>, B<sub>7</sub>, B<sub>9</sub>, B<sub>12</sub>), which are water-soluble and critical for cellular metabolism. The vitamin B<sub>3</sub> molecule is made of fourteen atoms (C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>). It naturally occurs in foods such as whole-grain cereals, broccoli, asparagus, legumes, nuts, mushrooms, and certain meats. It also occurs in the body as a derivative of tryptophan, one of the essential amino acids. It plays a role in innumerable reactions in the body and can be especially useful in the treatment of mental disorders because of its participation in complex chemical interactions that affect nervous system functioning. As with other water-soluble vitamins, vitamin B<sub>3</sub> has great therapeutic range, which is the difference between the toxic dose and the optimum therapeutic dose.

One common side effect of vitamin B<sub>3</sub>

can include a flush, when the skin increases in heat and, due to the vasodilation property of the substance, turns a reddish color; flushing is harmless.<sup>35</sup> Vitamin B<sub>3</sub> can produce gastrointestinal discomfort, nausea, low blood pressure, and vomiting if the dose exceeds saturation. Biochemical individuality, a central tenet of orthomolecular medicine, is the principle that each individual has a relatively unique constitution and thus requires different amounts of particular nutrients to be well.

Greater amounts of vitamin B<sub>3</sub> are required to produce a flush in people who are deficient in vitamin B<sub>3</sub>. Studies by researchers outside the orthomolecular context have shown that people with schizophrenia do not experience the flush that non-schizophrenic people experience until taking much higher doses. Messamore, for example, observed, "a blunted skin flush response to niacin is a widely replicated abnormality associated with schizophrenia."<sup>36</sup> Similar results have been produced in several other studies, the common interpretation of which is that schizophrenics have subsensitivity to vitamin B<sub>3</sub>. From an orthomolecular point of view, the reason schizophrenics are sub-sensitive to niacin is because they are deficient in it: "People who need niacin the most flush the least."<sup>37</sup>

Orthomolecular medicine particularly lends itself to treating deficiency diseases, the types of illnesses latent in everyone that manifest in the absence of a necessary element in the body. Pellagra, for example, is the deficiency disease, which manifests when vitamin B<sub>3</sub> intake drops below the minimum required amount. Pellagra is characterized by dermatitis, diarrhea, dementia, and death. The mental symptoms associated with pellagra resemble those of schizophrenia, as they include alterations of auditory and visual perceptions, thought disorder, mood disorder, and delusions.<sup>38</sup>

The adrenochrome hypothesis and the clinical indistinguishability between psychological symptoms of schizophrenia and pellagra were two main factors in justifying experimentation with vitamin treatment. The adrenochrome hypothesis has rightly been questioned,<sup>39</sup> and no blood test exists show-

ing excess adrenochrome in people with schizophrenia. Likewise, no blood test exists showing excess or lack of dopamine in people with schizophrenia. In fact, no physiological evidence of the etiology of schizophrenia has ever been corroborated.

Every hypothesis about the cause of schizophrenia is crippled by the fact that schizophrenia is not a clearly defined construct. There is no objective measure of the condition because its parameters have been neither objective nor consistent. Moreover, the phenomena that define the condition are qualitative in kind; they are psychological experiences and behavioral expressions of individuals. Plus, subjective observers make schizophrenia diagnoses. There is no physiological diagnostic test for this disorder. Nevertheless, certain psychological symptoms appear in many individuals in a similar way, such as auditory hallucinations, which have always been part of the schizophrenia construct. The consistent incidence of these symptoms indicates a certain variation of disordered mental and behavioral experience that calls for treatment of the whole person, including chemical support. What, then, is the proper chemical support for such a condition?

Investigations into the orthomolecular approach to treating schizophrenia have yielded mixed results. Numerous reports and studies have demonstrated, with clinical and statistical significance, that a vitamin protocol with especially high doses of B<sub>3</sub> effectively reduces schizophrenic symptoms. However, numerous other studies have disconfirmed these successful findings.<sup>40-43</sup> All of these studies—confirming and disconfirming alike—are valuable, beset with unique strengths and limitations, and worthy of examination. Within the confines of this article, however, only Hoffer's 1994 report will be discussed. A thorough review of evidence as well as a discussion of the American Psychiatric Association's assessment of the orthomolecular treatment<sup>44</sup> and Hoffer and Osmond's reply to it,<sup>45</sup> can be found in the dissertation<sup>46</sup> from which this article has been distilled.

Notably, the orthomolecular treatment became more complex and better understood

through the latter half of the 1900's, particularly influenced by Abram Hoffer's massive volume of work. Among the most significant changes in the treatment protocol was the addition of large doses of vitamin C, which was incorporated after Pauling et al., demonstrated that when people with and without schizophrenia were given the same amounts of vitamin C, the people with schizophrenia excreted less from their urine, indicating their body had a greater need for the vitamin and was absorbing more of it.<sup>46</sup>

Hoffer reported the outcomes of 27 cases of chronically schizophrenic patients who had been treated ten years or more by primarily orthomolecular means.<sup>48</sup> Three main selection criteria were used to recruit this sample: The patient had been under the orthomolecular treatment for at least ten years; had been ill for at least seven years before starting the orthomolecular treatment; and had not been responsive to any previous treatment. Hoffer had been a practicing psychiatrist and prolific academic for over 40 years by the year he wrote this paper. He observed the trend in psychiatric research to describe statistical outcomes alone, acknowledging pejoratively: "I have read many papers where it is impossible to get any feeling for a single patient." In this report, he described<sup>27</sup> individual cases thoroughly, and aggregated the statistics from their objective measures.

Each of these patients adhered to the four main elements that now constitute the orthomolecular treatment, which include diet, vitamins, minerals, and drugs. The two principles of diet while on this treatment are to consume no food additives and no foods to which the patient is allergic. The primary vitamins used are B<sub>3</sub>, B<sub>6</sub>, and C in individually appropriate doses. Neuroleptics are used at the optimum dosage throughout treatment, reducing the dosage as soon as possible, and the objective always being to eliminate them. Orthomolecular psychiatrists have never been opposed to the use of drugs as a part of an overall program, but are firmly opposed to the use of drugs exclusively because drugs alone do not help patients become well.

Each patient in this report was originally

diagnosed as schizophrenic according to the Hoffer Osmond Diagnostic test and placed on an individualized orthomolecular regimen. Hoffer rated each individual based on the following measures of recovery: Freedom from symptoms and signs; ability to get along reasonably well with family; ability to get along well with the community; and the ability to work at a job and pay income tax. Patients were considered well if they met all four criteria, much improved if they met three, improved if they met two, and unimproved if they met one or none. Of the 27 patients, 18 were well at follow-up, three were much improved, five were improved, and one was unimproved.

Hoffer's 1994 report provided evidence that adherence to the orthomolecular approach for an extended period of time is safe, can be curative, that adverse effects of neuroleptics are markedly diminished when the dose is minimal and the patient is consuming sufficient nutrients, and that the orthomolecular treatment is palatable enough for reliable compliance. A unique aspect of this report was that these were chronic schizophrenics who had been ill for a long time prior to starting the orthomolecular treatment. In the early days of treating schizophrenia orthomolecularly, it was concluded that chronic schizophrenics did not respond to the treatment.

Over the course of the following decades, orthomolecular psychiatrists realized that chronic cases did respond, but more slowly and to much higher dosages.<sup>49</sup> Several of the disconfirming studies published soon after the initial successful trials of orthomolecular treatment of schizophrenia undermined further research interest because the researchers failed to acknowledge that treating acute versus chronic schizophrenics requires different dosages of vitamins.

Evidence showing that an orthomolecular regimen can be helpful in treating people with schizophrenia continues to warrant attention and justify research. Also, evidence of the severity and range of adverse effects of neuroleptics is alarming and, in itself, calls for an investigation into fundamentally different types of treatment for schizophrenia. The majority of psychiatrists and mental health pro-

fessionals in North America are not aware, or do not acknowledge, that an orthomolecular approach has been under investigation since 1952, and has, at least, engendered a need for further investigation.

## Research Method

The central research question for this investigation is: What is the experience of individuals diagnosed with schizophrenia who switched their primary biological treatment modality from neuroleptic treatment to orthomolecular treatment? A multiple case study was employed to glean answers to this central question.

Hoffer observed, "case studies have disappeared from journal articles, as if living patients no longer existed or counted for very much."<sup>48</sup> Moreover, questions abound regarding individuals' experiences while on these different treatments. The psychological and relational, or, intrapersonal and interpersonal experiences while on neuroleptics versus an orthomolecular treatment must be more thoroughly documented because it is in this domain that a person ascertains his or her quality of life. And only the person who has these experiences can provide such an account; no psychiatrist peering in from outside a one-way mirror on a person hearing voices, nor any brain image, nor any valid and reliable measure can ever reflect the person's living qualitative experience as accurately as the person can.

The nuances of different treatments can best be captured by a richly detailed narrative account from the individual, the family, the health provider, and a thorough profiling of the individual's social circumstances and medical history, for which a case study is designed. Much is known about the adverse effects of neuroleptic drugs, but not about how or whether the experience of spirituality is influenced while on these drugs. Spirituality has been found to play "a significant, if not critical, role in the recovery process of people with schizophrenia,"<sup>50</sup> and whether that experience of spirituality is hindered, fostered, or unaffected by the biological treatment is a useful question. It is possible that people

with schizophrenia have the potential to experience an especially pronounced sense of spirituality; to recall Joseph Campbell's adage, the psychotic drowns in the same waters in which a mystic swims. A treatment that does not inhibit acuity may allow the individual to confront, transform, and integrate his or her symptoms in a healthy way, and also to discern what is meaningful and possible in life.

### Recruitment

In-person, telephone, and electronic contacts were made with practicing orthomolecular psychiatrists, concentrations of whom appear to be in the Bay Area of California, various places in Canada, and in Wichita, Kansas out of the Riordan Clinic, as well as scholars of orthomolecular psychiatry. I also contacted the producers of the documentary film, *Masks of Madness: Science of Healing* (1998), to invite the individuals who are featured in the film reporting their experiences of overcoming schizophrenia by orthomolecular means, but none chose to participate. I also announced the study in the Orthomolecular Medicine News Service; this led to finding participants.

Prior to writing the full proposal for this study, I attended the 43rd Orthomolecular Medicine Today conference in Vancouver and spoke with orthomolecular practitioners and scholars who appeared confident that they could arrange introductions to qualified potential participants if I were to follow through with the study idea. These leads, however, were not produced. Contact attempts were made with those professionals from the conference as well as everyone connected to orthomolecular psychiatry whose contact information was obtainable. A few corresponded and tried helping the recruitment process, but no one was able to provide contact information for a potential participant. I found Internet forums in which individuals with schizophrenia gave testimonies about the success they had with the orthomolecular treatment and posted a call for participants in those forums, but no one responded. The initial proposal involved five participants, but had to be amended after five months passed with no leads. The total

number of cases amounted to two. The orthomolecular community, in general, did not support this project to the extent they had indicated being able to. Recruitment was difficult and took much more time than expected.

### Procedure

Interviews were done through video teleconference or telephone. I preferred Skype, but some participants felt more comfortable speaking through telephone. Each case rendered interviews with multiple people. The most comprehensive interviews, of course, were with the main participant—the case—and others included the closest people in the participants' lives (as determined by the participants) and the health care provider who played a role in prescribing treatment.

The case interviews consisted of five, maximum two-hour interviews taken at intervals, dedicated to discussing the experience of being symptomatic but unmedicated, on neuroleptics, and on the orthomolecular treatment. Both participants were willing to be interviewed two more times after the initial three that were planned. The friendly observers each underwent one interview lasting a maximum of two hours. The health care provider also underwent one interview for approximately one hour.

Along with the semi-structured interviews, I obtained other relevant information that could further illuminate what the individual's life was like during the three distinct periods of time that are being investigated. For one case, the records included a diagnostic form, copies of assessment tools, and an orthomolecular prescription profile. For the other case, a brief diagnostic form was obtained from a participant's psychiatrist, but it did not contain notes of any value.

The transcribed interviews were coded and analyzed for themes, which is a method of identifying patterns within data. Interviews were separated into three categories per case, namely, the main participant, the friendly observers, and the health care providers. Within these three categories, data were separated into three further categories based on time periods, delineated as symptomatic but un-

medicated, during the time neuroleptics were being taken, and since the introduction of the orthomolecular treatment. Themes were analyzed within the categories of each case and between cases for comparison.

## Results

The final sample in this study comprised two individuals with a history of schizophrenia that had been treated with the neuroleptic Risperdal and orthomolecular medicine. Dale was a 26-year-old man with an initial diagnosis of schizophrenia at age 23. Bob was a 28-year-old man with an initial diagnosis of schizophrenia at age 25. Each case represents approximately five hours of interviews with the primary participant, supported by independent interviews conducted one-on-one with 2-3 third parties who were family, friends, or healthcare practitioners who could corroborate or qualify data gathered from the primary participant. Real names, except for Dale's orthomolecular practitioner, have been disguised in this report.

## Dale's Story

Dale is a Caucasian Canadian who was 26 years old, unemployed, and living at home with his parents Robin and Keith at the time of the interviews. An intelligent, articulate man, his story involves multiple episodes of psychosis and experience with various modes of treatment, including drugs and an orthomolecular protocol. He granted over 5 hours of interviews, telling his story despite its "dark and uncomfortable" aspects. In addition, his mother Robin agreed to an hour of interviewing, as did Roger, a close friend, and Christina Bjorndal, the orthomolecular practitioner who has been treating Dale since November 2014.

Dale is the youngest of three children born to Robin and Keith, who have been happily married for 36 years. He was reared in a nonviolent home, middle class, in British Columbia. Dale moved from home to Vancouver after graduating from high school to attend the University of British Columbia (UBC). "When I made the decision to go to Vancouver," he recalled, "my parents were fully sup-

portive financially. They were fully supportive emotionally. They said that I could do it and they supported me all the way through." His parents paid his tuition and living expenses, and he completed his Bachelor's degree. The journey, however, was tumultuous.

The first challenge in the chronology of Dale's life leading to his first "psychological break" was the transition from elementary to junior high school, when he was between ages 10 and 12: "I went from being very popular in elementary school to junior high school [where] I lost friends and there were people all around me who were very mean towards me." Frequently a difficult time for any child, Dale coped by taking refuge in the sensual pleasure of eating candy. "I would go to 7-Eleven [convenience store] up the street and spend five dollars on candy and I'd eat it all that night. And I'd do that regularly. So I think that was the first time in my life where I was unwell and where it started to create a ripple effect in my life later on."

High school was a better experience. Dale was active in sports, maintained a 3.0 grade point average, and connected with people socially. Yet, he still felt "underlying issues" and had "no awareness around health."

Dale lived and studied in Vancouver for 2.5 years, passing his classes easily and experimenting with altered states of consciousness in his free time through psychedelics, meditations, and seeking paranormal phenomena. He used alcohol, cannabis, and cigarettes regularly and for recreational purposes, made no attempts to eat healthily, and had "different sexual partners" and "loose relationships." He believes he could have excelled in his classes, and not merely passed, had it not been for his lifestyle.

Dale had been experiencing increasingly dramatic and unsettling paranormal phenomena, and when he reported them to the university dispatch, he was arrested and taken to the psychiatric ward at the Vancouver hospital where he was interviewed and given anti-anxiety drugs. Then he was transferred to the university hospital and held for three days. "I was quite shaken," he recalled. "One, I had just got arrested and two, I had experienced

these paranormal, non-ordinary experiences.” He recalled having “bizarre thoughts” and low lucidity while in the ward. No diagnosis was made at this time. His parents flew into town, requested his discharge, and took him home, where he would spend the summer working at a golf course, enjoying the usual structure of home life, not seeking any paranormal experiences.

But when Dale returned to Vancouver for his third year at university, he went back to all of the behavioral patterns he established living there previously, now exacerbated by the confusion surrounding his paranormal experiences, arrest, and psychiatric detention. He was “in the habit of not taking care of myself and at the same time using things that alter my mind.” He described his actions during this period as “completely irresponsible,” and he was living in a house with seven others who had similar habits. This six-month period starting with his arrival back in Vancouver precipitated a severe psychological break.

The semester was ending and Dale had gone to campus for the final exam in his literature course when he began to think a secret society of people was following him. He arrived an hour early to the classroom where his final was to be held. The room was full of students from another class and the professor alerted Dale that he needed to leave. He obliged and waited in the hallway. When the hour elapsed and Dale entered the classroom again, his delusional thoughts amplified: “I was having these ideas that there was a group of underground young adults who were involved in a secret society following my actions and there’s a group of them on campus today so that they could monitor me.” While he was completing his final, another young man who was not enrolled in the class walked into the room and was asked to leave, just as Dale had done earlier. Dale was certain this guy “was one of those underground young adults who was monitoring.” He finished the exam, doing just well enough to pass the class, then left for home.

Needing to evade the members of the secret society, Dale “deliberately took a bus that wasn’t going to my house.” The bus came to

a stop and the door opened, but there were newspaper stands in front of the opening. Panicked, he jumped over them “like a crazy person,” and then he sped across ten blocks on foot. At home, he asked a housemate to join him for a beer and conversation, during which “I said something about the devil and Jesus and it was very intense.” Next he went into the basement, where he accepted his roommate’s offer to smoke cannabis from a bong. That was when “I lost control.”

Dale’s unstable state was clear to his roommates. One of them was especially alarmed when Dale said, “I’m going to rape and kill you.” He remembered saying that “jokingly,” but acknowledged, “It’s not funny.” After this awkward and alarming moment, Dale went to his bedroom and was “mumbling and doing bizarre things.” He recalled that he slept for a maximum of three hours and woke early with the overwhelming impression that “I was dead, in some eternity loop, on a spaceship.” He was shouting into the quiet house. No one answered. He went into the kitchen and put a steak knife in his pocket. The thought occurred to him: “Now they’ll know I’m sick.”

Dale walked around the block with a knife in his pocket, delusional, and anxious. He returned to find two police officers waiting at his front door, “but I don’t remember them being in uniform, so basically I saw them as being part of this underground group.” When one of the police officers tapped his shoulder, “I threw a punch and I just missed his face. And then they tackled me... They found this knife in my pocket and stabbed it into the ground beside me. They arrested me, put handcuffs on me. An ambulance came. I was put in the back of an ambulance.”

He saw the medics in the ambulance as “demon dragon evil nurses that were going to do all kinds of bad things.” He believed he was dead and being transported to hell. The ambulance brought him to the hospital where he was restrained to a bed and anesthetized. This was the beginning of psychiatric custody over Dale’s mental health.

Dale woke confused and disoriented almost 24 hours later in his grass-stained jeans, hands and feet cuffed to a bed. Dale’s exper-

riences in the hospital exacerbated his delusional thinking. He thought he was “on a spaceship in hell, and the things around me confirmed that. The restraints and the needles can all be seen as being abusive...or satanic, totally bizarre forms of treatment.” A nurse accompanied by two officers wheeled him to the entrance of a small, concrete, isolation room and asked him to enter. “I went in the room. They shut the door, locked the door, and that was three days in an isolation room,” he recalled with a shaky voice. He thought he was going to be in there for eternity. While in the room, “I tore up my sheets and I braided a noose and I bit my hand so hard that it bled to see if it was real. I didn’t know if anything was real...I kept looking at the security camera and I thought I could see like a miniature universe in [it] and at one point I was punching the door because I was... just in there... and definitely thought it was some kind of satanic place.”

Dale’s family swarmed him with support, which helped stabilize him. They were all disturbed to find Dale haggard, in a concrete room with a concrete bed, “messed up” and “out of it,” as Robin put it. It is possible that hospital personnel and Dale’s family were explaining what was happening to Dale more than he could remember or was able to understand, yet according to Robin, “All the doctors were gone [for a three-day weekend], so no one gave any explanations. The nurses deferred to the doctors who were not there.”

After the three days in solitary confinement, Dale was transferred into an area of the hospital for observation and then transferred to the psychiatric ward of the Vancouver hospital. After about five days, his delusions began to subside and he became relatively aware of what happened, who he was, and where he was. He spent a total of two weeks in that hospital, released on the condition that his parents promptly take him to see a psychiatrist in the early psychosis outpatient clinic near their home, which they did. The whole experience was “very dramatic, intense, [and] traumatic” for Dale.

Dale was not yet diagnosed with schizophrenia, but as having a drug-induced psy-

chosis. Nevertheless he was placed on 2mg of Risperdal (Risperidone) daily. He and his parents felt that the psychiatrist assigned to Dale, who was the Director of the Psychopharmacology Research Unit at that time, prescribed the drug too hastily, without inquiring into Dale’s subjective experience with any degree of patience, skill, or sincerity. Dale “never really made much of a connection with any doctor and a lot of it was being negotiated or talked about with my parents.” Robin, however, did not feel she had much leverage in the negotiations. Her impression was, “It’s basically just ‘Here’s your medication and let’s see what happens.’”

Dale met with the psychiatrist, who will be called Dr. Ratcliff, approximately every three months for two years. According to Dale, “He was pretty arrogant. He talked down to me...not very open.” No talk therapy was part of the meetings with Dr. Ratcliff. “[Meetings] were usually 15–20 minutes, just like ‘Here’s your prescription. How [are] your thoughts? How’s your mood?’ Nothing really significant or helpful.”

Robin witnessed these interactions and confirmed Dale’s experience: “At the early psychosis, they did nothing for him. I went to pretty much every meeting with him, and all they did was ask how he was feeling. There was no help. It was a very frustrating time for him. He continually asked for help, till he [eventually] decided against their advice and came off the medication.”

Dale adhered to 2mg of Risperdal daily for a total of 18 months. Dale lived at home while completing the two classes he never quite finished during that week of finals in December 2009, “and it took me a full four months to complete that. I lost a lot of functioning. I was very tired. I wasn’t able to concentrate. . . . It was devastating. It was crippling. I barely found the ability to focus on a book. I could barely read. I could barely write. My confidence was totally shattered. My ability to be social was totally disrupted.”

As time went on and Dale felt he had recovered from the psychosis, adverse effects of Risperdal persisted: “Confidence was lacking. I still found it difficult. I was still lethargic. I

was apathetic...sensitive to stress, like at the maximum I was able to complete three courses at a time, and I wouldn't even consider doing 4 or 5. So it was just like, an impairment of being able to focus and be productive."

In the fall of 2010, Dale transferred his studies to university near home and continued living at home, still seeing Dr. Ratcliff regularly. Dale and Robin eventually understood that Dr. Ratcliff was not intending to discontinue the Risperdal treatment "and Dale was not happy with that," Robin noticed. Dale sought information about the long-term effects of neuroleptics, and what he learned frightened him. He also started learning about the importance of nutrition and became interested in the raw food movement. Although he was gaining a positive momentum in his life, Dale had not quite normalized socially and exhibited the apathy, impaired focus, and excessive sleep that he attributed to Risperdal with certainty.

Dale's close friend Roger described some of Dale's social behavior during this period. Roger recalled, "He would make plans and just not show up or cancel plans at the last minute" to a degree that Roger thought was "too much and really strange." Also, "it was relatively common where we would all be doing something, and he suddenly just leaves, just doesn't feel bad about it either. That has happened in the past very frequently." These tendencies decreased when Dale abruptly stopped his 2mg of Risperdal in the summer of 2011. He wanted to avoid taking the drug long-term and was enthusiastic about his newfound healthy diet and lifestyle. "When he stopped taking his medication," Roger recalled, "he had a better mood overall and became a bit more friendly." Dale remembered, "When I went off medications the first time in 2011, I definitely noticed a major jump in my energy level."

Dale was off Risperdal for nine months. He was gaining confidence and motivation. Robin noticed that "he seemed to have emotions" again. He completed the spring semester of studies at the university and started working at a farmers' market, at which point potent psychological processes commenced. "I started experiencing emotional releases," he

said. "I would be driving to work, and I would just start crying, but it was like a cosmic cry, some kind of very intense energy that had to do with death and existence." This process interfered with work one day, which led him to quit his job and leave in the middle of his shift. Dale's parents were surprised to see him home much earlier than expected that day, acting very strangely. They all agreed that if Dale could talk to a professional psychologist, he could move through what he was experiencing in a healthy way, and potentially garner insight from the experience—in contrast to what happened when they went to the early psychosis unit.

So on a Saturday in May 2012 hours after he quit his job at the farmers' market, Dale and his parents went to a nearby hospital. The early psychosis unit was unstaffed, so they were sent to the emergency department. Dale agreed to go, hopeful he would meet a compassionate professional. "They took him immediately into a room that was all concrete," explained Robin, "and Keith and I went with him thinking 'Holy cow what is going on here?'" They passed a few rooms where they could hear people screaming as they walked through the hallway. Dale was stunned: "They put me into an isolation room again and as soon as I stepped in... I nearly collapsed... Even though my parents were with me, to be in that room was so overwhelmingly traumatizing to me that I almost passed out."

Dale, Robin, and Keith waited in that room for approximately four hours until a psychiatrist came and requested to observe him overnight. This turned into another three-day confinement in the isolation room.

Dale said he was "very psychotic" during those three days. The morning after he was detained, a Dr. Crawford took over Dale's psychiatric treatment. His first direction was that Dale resume a Risperdal regimen, this time on 3mg. "Dale just looked enraged," said Robin, but he complied. She said: "It upset Keith and I, how quickly they wanted him on medication, no observing, nothing... He never ever felt good being on [Risperdal]." Learning Dale was going to be on a higher dosage

of Risperdal was difficult for the whole family, especially since they had gone to the psychosis unit for talk therapy.

The staff transferred Dale to the main area of the ward after his three days in an isolation room. Dr. Crawford diagnosed him as having schizophrenia, but had a young medical student inform Dale of this diagnosis instead of doing it himself, and he increased Dale's Risperdal to 3.5mg within the first few days. "I guess he did something weird or strange and they just bumped him up to 3.5 which we couldn't understand either because...for what reason?" Robin stayed with Dale for several hours everyday of what became a six-week stint in the ward.

"Then," she recalled, "he [went] into a deep depression, and he had a hard time functioning." He ingested 3.5mg of Risperdal daily until mid-2014, approximately two years. I asked Dale to compare the two periods of time when Risperdal was the only treatment he was using for his condition, the first of which was 2 mg for 18 months spanning 2009–2011, and the second was 3.5mg for 26 months spanning 2012–2014. "It's like a Band-Aid. Both times I didn't see significant improvement. It was just kind of a masking of symptoms. I've actually had that direct experience of not improving but not having symptoms so much. That seems to be what it does."

At the turn of 2013, Dale felt an improvement in his functioning. He re-enrolled at the University, took two classes, and was "quite socially active." "A lot of my confidence had been dissolved," he added, but he made friends when he joined the community garden club at school. "I was non-symptomatic and functional, with just a much lower tolerance for stress," he explained, "which resulted in me taking [fewer] classes and...not being fit for work." Nevertheless Dale continued experiencing adverse effects of Risperdal, including "low mood, apathetic ...low motivation, and low concentration." He was overly sensitive and irritable. Also, "my nipples would have a little bit of fluid coming out of them."

Robin recalled Dale seeming "lethargic" and "numb" while on a 3.5mg daily dose of

Risperdal. Dale said that he "would sleep for 12 hours a day, which was really disruptive... That was a big one." "Sleeping 12 hours a day really sucked and still waking up and having low energy...and I would sleep so heavily that nothing would wake me up for the 12 hours."

Dale met with Dr. Crawford every two months between mid-2012 and late-2014. They never developed a positive rapport. Dale was researching other healing modalities for schizophrenia, and brought what he was learning to his meetings with Dr. Crawford, but sensed an "incredible mesh armor [blocking] anything beyond using medications for life." Dale discussed more about his experience with Dr. Crawford: "Oh God, this annoyed me so much... I would get anxiety talking to him...so I would have to breathe heavily to calm myself down and he saw this as me being sick." So the doctor kept saying, "You're not well," "You're not well." And I told him "I'm experiencing anxiety right now. I don't like being interviewed in here. It was like a teaching hospital so it was like students observing this at the same time as he's questioning me. It was really quite awful."

Dale had read about the orthomolecular treatment of schizophrenia. When he inquired about it, Dr. Crawford, "talked about how Abram Hoffer and [Humphrey] Osmond were into the psychedelic research and that they're pretty much totally written off. And he would talk about how...none of it is true or scientific."

Dale completed his studies and made many improvements in his lifestyle, despite the adverse effects of Risperdal and stressful meetings with his psychiatrist. He graduated in mid-2014 with a Bachelor's degree in Visual Arts. He also did ten sessions with a nondual oriented psychotherapist between February and April of 2014, which was a "transformative experience for me." Dale was dedicated to optimizing his health, which his choices increasingly reflected.

The time had come to begin tapering his Risperdal. He was confident that with nutritional support and continued contemplation on the perspectives and perceptual shifts he

gleaned from the psychotherapy sessions, he could at least reduce the dosage of Risperdal. He was determined to taper safely and was counting on guidance from his psychiatrist, which he did not receive. "His psychiatrist point blank said to him, 'You'll be on this for the rest of your life,'" recalled Robin, who was in the meeting the day Dale asked for his prescription to be lowered by 0.5mg. "He pretty much wrote it out and threw it across the table. I saw that. And he said 'To your own peril.'" This was mid-2014. The value of the drug was not apparent to Dale, but its detriments were. He was intent to come off of it.

I forewent pursuing an interview with Dr. Crawford at Dale's request. His departure from Dr. Crawford's care was "awkward" and "emotional." In November 2014, after a few months of doing well on 3mg, Dale expressed his wish to taper toward a complete discontinuation of Risperdal. Dr. Crawford told Dale that "because I was making the decision to come off of the [drug], that he was going to close his file on me at the hospital and that I would no longer be under his care."

Dale responded: "I was shocked, because I thought, like my plan was that he would still see me and he would still prescribe me medication as I lowered it and could give him updates on how I'm doing and if I need medications again I could see him." That was the end of his relationship with Dr. Crawford. Dale's view came to be that psychiatry has "really missed the boat in the treatment of mental health, and it's because they've completely left out the nutritional aspect of it."

Dale began a search for an orthomolecular practitioner in October 2014, just prior to the departure of his psychiatrist. He found Christina Bjordnal through the Canadian Society for Orthomolecular Medicine, a Naturopathic Doctor with personal and professional experience treating mental pathology with vitamins. She was formerly a patient of Abram Hoffer. Dale met with Bjordnal for the first time November 25, 2014. They had met four times over the course of four months at the time I interviewed her. Initially, he was "quite withdrawn," said Bjordnal. She also found that he had "some poor impulse control, delu-

sions...and grandiosity in his thinking." She administered the short form of the Positive and Negative Syndrome Scale (PANSS), a scale used to measure schizophrenia symptom severity, and rated him an overall 42 out of 180, which is low but in the realm of schizophrenia. His score was highest in the depression domain.

Dale had been taking 7g of niacin and 14g of vitamin C daily for approximately one month before meeting Bjordnal, a self-prescription based on what he had learned about orthomolecular psychiatry. Bjordnal prescribed a niacin dose range of 11-16g daily, and he has been consistent with 11g of niacin daily, split into three servings. She prescribed a range of 22-30g of vitamin C daily, and he has been consistent with 30g daily. She also prescribed a formula that she compounds with her own pharmacist called Mood Boost, which is primarily a blend of B vitamins. He takes one serving per day. Bjordnal advised Dale to continue with Risperdal at the same dosage of 3mg daily. Dale, however, felt ready to reduce the dosage. He lowered it to 2.5mg in December, to 2mg in January, and to 1.5mg in February, which the vitamin intake gave him the confidence to do.

At the time of our last interview on June 5, 2015, Dale had not deviated from his orthomolecular protocol. "What I noticed almost immediately is that my mood leveled out. I was no longer experiencing unexplained irritability. I wasn't getting periods of depression where I would just have low mood, and I wouldn't know why. So in the last few months, the lowest I've been is nowhere near as low as before I was taking the nutrients. My sleep has improved. I don't sleep 12 hours a day anymore. I sleep 8 or 10 at the most, and that's been really awesome because I have more time during the day."

"Energy levels are definitely up," he said, but "they're not at 100%," a limitation he attributed to Risperdal. "When I went off medications the first time in 2011," he recalled, "I definitely noticed a major jump in my energy level, so I'm expecting that when the medications are at zero, I'll have some of that energy return." The emotional stability and increased

energy have led to greater productivity and positive behavioral changes. In our third interview, four months after he had started the orthomolecular treatment, he reported: "It's only been in the last four months that I've been meditating consistently. It's only in the past four months that I've been writing in a journal consistently, so I feel more like I have more mental capacity to consider my own goals, my own lifestyle, and also [to] interact with people. I'm more open to interacting with people."

Others also noticed Dale's improvement since introducing the orthomolecular protocol. "I think he's doing way better," said Robin. "He's way more grounded," and "there doesn't seem to be these big swings in him." She also noticed his energy increase and described him as "more up now, like quicker." "He has definitely improved," said Roger. "Considering where he's coming from, he's way more stable now." Previously entrenched in patterns of unpredictability, "now," Roger said, "he seems more centered."

Dale added the following about the changes he had noticed since introducing the vitamins: "Before I was getting mood swings where I would be unexplainably moody. I would be very irritable. The smallest things that are totally understandable would be very irritating for me. It was unexplained, and there would be no reason for it and also I would experience a day out of the week where I would have really low mood and really be not motivated and apathetic. All of that stopped once I was on the orthomolecular. My mood stabilized...I feel more clear. I'm not having these episodes of irritability."

In contrast to the period while using Risperdal as his exclusive biological treatment, when Dale was not reading, writing, or working artistically, approximately one month after introducing the vitamin protocol, "I wrote my paper [and] I have written two papers since then. I am now reading regularly and have opened up creatively." One of these papers was accepted for publication in a well-known journal of nondual psychology. Dale acknowledged that this change in his cognitive capacity was "due in part to lowering the

[Risperdal]."The emotional stability, increased productivity, restored social functioning, and creative expression that the combination of lowering the Risperdal dose and introducing an orthomolecular protocol has brought about, have also fortified Dale's confidence.

Bjorndal was pleased with Dale's progress and impressed by his determination to optimize his health. "When I saw him the first time he didn't look like he'd had a shower. He seemed quite flat in his mood and quite depressed...he was very withdrawn. He wasn't engaging....When I saw him again...his mood had improved tremendously from being depressed. So that's been quite remarkable to see that improvement. It's great."

Bjorndal administered the PANSS again on May 25th, 2015, six months after the first one. Dale scored an 11, a difference of 31 points. The four interviewees unanimously reported that positive changes in Dale's physical and mental health appeared after he introduced the orthomolecular protocol.

### **Bob's Story**

Bob is an Asian-American man who was unemployed, residing in a transitional housing facility in Southern California at the time of the interviews. Bob granted four hours of interviews. His mother Pam interviewed for a sum of three and a half hours, and his sister Tara for two and a half hours. Bob had no particular religious background, and his highest level of education completed was high school. He is the first of two children born three years apart, raised in an affluent area near a beach in southern California. Bob was diagnosed with schizophrenia in 2012 at age 25, an event preceded by a history of mental dysfunction and drug treatment. At the time, he had been arrested six times, and was incarcerated twice, once for 16 months on a burglary charge and once for 12 months on another burglary charge. He has never had a job, and he has been admitted to a psychiatric hospital seven different times.

For reasons detailed below, Bob has had periods of taking a variety of prescription drugs, including central nervous system stimulants Ritalin (Methylphenidate), Dexedrine

(Dextroamphetamine), and Xanax (Alprazolam), as well as neuroleptics Abilify (Aripiprazole) and Risperdal (Risperidone). Bob was admitted to a psychiatric hospital in 2012 due to an episode of yelling uncontrollably, chasing a woman down the street, and throwing furniture. He was diagnosed with schizophrenia and prescribed Risperdal, but did not comply with taking it. One year later, he was admitted to a psychiatric hospital again, and adhered to Risperdal at 6mg daily for the subsequent 13 months.

His mother is a medical doctor who learned of the orthomolecular treatment for schizophrenia through her colleagues at a University in Los Angeles, and shortly after another schizophrenic episode in 2014, advised him to start taking a multivitamin, which enabled him to reduce his Risperdal dose by over half. Later, he introduced a separate niacin supplement, which enabled him to discontinue Risperdal. Pam oversees his treatment. Neither of the two psychiatrists he has worked with since 2012 was willing to be interviewed.

Bob grew up in a troubled household. His father was an entrepreneur with a military background and was physically violent toward Bob's mother. "My dad used to beat my mother a lot," and "he used to drink a lot," said Bob. Bob was a "super smart" child. His "verbal skills were way ahead of his age, but he just didn't perform well in school," Pam said. He was maladaptive socially. "He would steal kids' toys and bring them home, and lie about it," recalled Tara. When Bob was 12, his mother was diagnosed with ovarian cancer, "which really freaked him out," she said. He began smoking cannabis shortly afterward, which began what Bob described as an "addiction for 11 years."

"In high school," said Tara, his behavior "got really bad." Bob went to one of the nation's top ranked public schools "in a very beautiful area with lots of money all around." The school was predominantly upper class White students, "mainly spoiled rich kids and people with no appreciation for things," according to Bob. Bob's parents bought him several expensive cars, which was normal for

the kids in his school. "Kids [were] driving around in \$40–80,000 cars that their parents bought them," said Bob. He recalled being irked by the kids who did not appreciate what they had yet did not earn. "They don't know what they have until they lose it." Bob, in contrast, viewed himself as an earner, although his methods of earning were unconventional. "I earned, in one way or another, whether it was legal or not. I just like to be more of an earner." He stole regularly throughout his teenage years and early twenties, from family and strangers. His parents knew of his stealing, but could not correct the behavior.

After an eventful final couple of years as a teenager, including his whole family moving to Japan while he stayed in California, Pam returned in 2007 when she divorced Bob's father. Bob, now 20 years old, moved in with Pam at this point. Then Tara moved back, but lived on her own. She said that during this period, "I saw my big brother smoking every chance he got. He'd wake up and grab his bong and start taking bong loads." According to Pam: "All he did was stay home... [and] he was smoking pot really heavily... He was so messy and trashy. I couldn't handle it... He would just watch [television] all day, the history channel. [He would] study and obsess and read these books on military."

Bob recalled, "I read all the required readings from West Point," a prestigious military school. "He knew the strategy of every military operation of every major army. It was freaky to me," said Pam. "He actually took this exam to get into the army, and he scored so high that the lieutenant called and [had] him take it again, and he scored just as high, if not higher. They were blown away. They were calling regularly, trying to get him into the military." Bob noted: "My dad groomed me to be in the military, [but] me being rebellious, I took no interest in [joining]." Bob started experiencing anxiety attacks at this time.

Pam put him in contact with her doctor who gave him a prescription for Xanax at 5mg daily. "He did need something, but that was the worst drug in the world for that kid....[Xanax] made him absolutely psychotic. He would sit at the kitchen table and pour

[the pills] out, and count them repetitively... for hours. I couldn't get them from him, and he had them legally." Pam recalled contacting the doctor, who happened to also be her friend, and said, "If you weren't my friend, I would sue your butt. Bob was just totally out of his mind."

Pam stayed up all night with him one night, "worried he was going to overdose on them and die." He stayed awake through the next day, and then the following night. He had taken two Xanax pills and was showing no signs of sleep. "I couldn't stay awake," said Pam, so she called the paramedics, but police came to the house instead because "they thought he was on street drugs." Police entered the house aggressively. "They tased him 10 times. I was counting. And they finally got him out to the car... They wound up cuffing him and putting him in the back of the squad car, and he kicked out the back window."

"It was really crazy and stressful. He was displaying full-blown craziness," Pam said. Bob was arrested and spent the night in jail, but he was released with no charge. "It got really intense for a couple months," recalled Pam. Two weeks after that incident, "he wiggled out again. He had Xanax again. It really did make him insane." Pam was taking Bob to a local hospital to seek professional help for his anxiety when Bob suddenly "jumped out of the car while I was driving." Police arrived on the scene and escorted Pam and Bob to the hospital. At the hospital, Bob "pissed off the intake coordinator, so they wouldn't 51/50 [confine and assess] him." Pam said that during this period in Bob's life, he was a "master at sabotaging getting help." He is "brilliantly manipulative," and "he was very tricky in those days." He avoided seeing a psychiatrist, so no diagnosis was made at that time. "He has a very powerful mind, but it wasn't directed in a positive way at that time... He had an evil streak in him."

Bob, who was still taking Xanax at 5mg daily, was now at the last of his prescription. His mother forbade the doctor to provide more. Two weeks after jumping out of his mother's moving car, he stole some of her jewelry. "I was sleeping and he came in and

stole... a bunch [of my jewelry]. I found it in his room... He had it wrapped in a cloth, and I was unwrapping it, and he [was] standing over me, and I stood up, not quite knowing he was that close to me. I hit under his jaw with my head, and he got irate and punched me in the ribs. It was the one and only time he ever hit me. He actually broke my ribs. He hit me really hard. And it scared the crap out of him when he did it. Right there, on the spot, he packed his stuff in a suitcase and he left, and he never came back. It scared him [because] he really loves me."

Bob went to Las Vegas and lived with a friend. The three interviewees had little to say about this period. Bob did not remember much about it, or chose not to share and neither Pam nor Tara were in close communication with him. After almost one year, he was arrested in Las Vegas for stealing. He spent 16 months in jail and started smoking cigarettes in that time.

After being released in 2009, he moved back to Los Angeles and stayed with Tara, who had been undergoing chemotherapy for lupus. Bob would steal Tara's prescribed narcotics and sell or ingest them. Then, only a few weeks after his release from jail in Nevada, Bob was arrested again for stealing; this time he had drawn Tara into the situation and compromised her safety. The series of stealing incidents, prescription drug abuse, violence, and arrests "sparked a whole investigation of his mental health," said Tara. The stealing incident involving Tara led to Bob being jailed again until 2011.

Bob described jail as "another world." He said he felt "disconnected from society," but was involved in social relations with the inmates. He said, "I developed more character, just by intermingling with the other races and getting their ideas." He also read many books about various subjects during that time, including the works of philosophers Socrates, Plato, and Aristotle. Although troubled, he was always exceptionally intelligent and had an "amazing memory," he said.

Bob's jail term in Los Angeles led to him meeting a fellow inmate who would eventually have an extreme influence on Bob's be-

havior. This man was 41 years old at the time he and Bob met, and went by the alias, Fat Cat. Tara described Fat Cat as “one of the most unhealthy, scary characters you could ever possibly meet.” According to Pam, “This guy had been a meth addict, career criminal, in and out of jail his whole life, an obese, pathetic human being. And he convinced my son that he was like a big brother to him...My son acquired this nickname, which honestly became like another personality—Charlie.”

Fat Cat and Bob’s “attachment to each other...and how they would talk to each other, and how inseparable they were [was] unreal,” said Tara. Pam recalled, “I wasn’t able to see my son alone for two and a half years.” As Bob and Fat Cat grew closer, Bob’s alter ego Charlie grew increasingly distinct from Bob. Fat Cat had a way of eliciting Charlie. “Whatever it was that Charlie fed off of, Fat Cat had,” said Tara. Pam recalled that when Bob was identifying as Charlie, “there was no interaction. There was no connection. It’s like the connection I had with my child wasn’t present.” Bob “didn’t only make bad decisions as Charlie, but Charlie only made very bad decisions,” said Tara. Asked about the nature of Charlie, Tara replied:

He speaks extremely fast, and he always is very in need of something. He is totally driven toward a result of some sort. He’s always needing something, wanting something, and he has to have it, and it can’t happen fast enough. That’s how Charlie is. He’s very destructive...

“When he was lucid, he was afraid of himself,” said Tara. Then, “Bob fell in love with this girl. I mean, like, head over heels in love,” recalled Pam. After his release from the Los Angeles jail, Bob started smoking marijuana again, but at a lower rate than before his jail terms. “He had a little medical marijuana but he wasn’t always wiped out,” Pam said. “I could take him out to dinner and...he was coherent.”

Pam recalled that before his birthday in 2012: “He said he wanted to take [the girlfriend] on one of these little Mexican cruises, so I gave him, like, \$1,000 bucks, like an idiot, and [Bob and the girlfriend] went and bought

a bunch of pot with it. So he was smoking a lot of pot for a short time. And [eventually] the girl split from him. She was just in it for the pot haul.”

“I got really depressed,” said Bob. Losing the girlfriend coincided with when Bob was experimenting with replacing smoking marijuana with smoking Spice, a legal herbal mixture product containing psychoactive components including synthetic cannabinoids. According to the European Monitoring Center for Drugs and Drug Addiction, who has been examining Spice since 2008, it “may have a greater potential to cause harm” than natural cannabinoids found in marijuana, and identified “a risk of severe psychiatric complications.”<sup>51</sup> Bob assumed Spice was healthier than marijuana because Spice was legal. He smoked it for about one month and said, “I was using it heavily...I smoked that and it gave me these body twitches and made me feel weird...It made my brain chemistry [seem] off balance.” According to Pam, “Spice put him over the edge.” He described it as “horrible stuff,” and said that the combination of using Spice and the break-up with his girlfriend “started the...crisis.”

One night, after they had broken up, Bob was chasing his ex-girlfriend down the street and yelling, near where he was living with Fat Cat. When he came back to his house, he was “throwing furniture and breaking stuff,” said Pam. The landlord was notified and called the police who took Bob to a psychiatric hospital, where he initially spent two weeks. The psychiatrist in charge of his treatment diagnosed him with schizophrenia and prescribed him 5mg of Risperdal. Asked what that hospital experience was like, Bob recalled “people screaming, yelling, drooling, [and] fighting.” During the subsequent 3 months, he was released and readmitted four more times. Bob met with the psychiatrist twice after that three-month period, and she increased his dosage each time. He was noncompliant, however, and discontinued the treatment after a couple of months because he disliked how it made him feel.

Between 2012 and 2013, Pam observed that Bob “started deteriorating.” He “started

going slowly downhill,” but it was “gradual.” He was living with Fat Cat, who always called him Charlie, and he still identified with that name and personality, but he was not stealing anymore. He was also no longer smoking Spice or marijuana. Yet, “he was just so out of it,” said Pam. Bob recalled: “I just didn’t feel quite right...I was extra moody. I would just really read into things more than they were. I would have hissy fits...I started secluding myself more...It made me question myself a lot more than I had at any other point in my life.”

At the time of his birthday in 2013, Pam and Bob’s probation officer collaborated for an intervention for Bob. They got him to agree to spend a few days in the mental hospital. They also negotiated a provision of his probation that he move into a sober living facility, away from Fat Cat. He spent five days in the hospital, and was prescribed Risperdal again. Bob did not feel thoroughly assessed by the medical staff in the hospital. “They didn’t really talk to [me],” he said. Nevertheless, he complied with 6mg daily, for 13 months. He met with a psychiatrist every other month, but was disappointed with the service. “I’d sit there and wait...just to see a doctor who was, quite frankly, not very helpful or interested in my well-being, just more interested in experimenting with different drugs; they weren’t very interested in my opinion, how I felt.”

Moving apart from Fat Cat was “a turning point for [Bob] because it was court ordered, and he had to do it,” said Pam. “So, that was when he first straightened out,” she added. Expressions of Charlie were subdued. But when the court order was over after six months, he returned to live in a sober living house with Fat Cat for six months, until his last hospitalization. “Most of the episodes came... when I was taking the full 6mg of Risperdal,” said Bob. “He gets extremely depressed when he’s on the [Risperdal]...and so dull,” said Pam.

Tara recounted, “When he first started heavily using... Risperdal...he seemed...very unhappy about life....It wasn’t like he was going to start setting goals, things he wanted to do in his life. It wasn’t like he wanted to do anything normal. His conversations would

consist of the exact same thing... He was alive but wasn’t alive.”

Bob recalled, “The depression [led] to me lashing out, being very angry... not eating...I’d always cook, but after [introducing Risperdal], I was eating a lot of TV dinners.” He noted being especially irritable around his family. The irritability seemed to stem from frustration with the way he felt. “I felt slower, less confident, because the memory lapses and those other things....[I was] not too sure of myself because I was having ticks and stuff like that. And I was always worried because I heard the side effects [of Risperdal] gave men breasts, so that was always in the back of my head.”

Also, he was sleeping up to 13 hours a day. Pam recalled, “He was incapable of focusing...Risperdal...hit him over the head with a hammer...[He was] so absolutely unproductive, absolutely not present.” “I like to function smoothly and live carefully, but with the Risperdal and the memory lapses it brought on, it wasn’t really allowing me to,” he said.

Bob reverted to acting out as Charlie several times during this period while he was taking Risperdal and living with Fat Cat again. On an evening during the week of his birthday, he and Fat Cat were riding bicycles near their residence and, according to Pam, “[Police] searched both of them. My son didn’t have anything [illegal] on him, [but Fat Cat did]. They arrested Fat Cat, took him away, and I got a call from the guys in the house saying [Bob] was sitting in the middle of the street putting cigarettes out on his arm.”

One of the other members of the house called Pam to tell her that Bob was acting crazy. She drove for an hour to where he was. When she arrived, the housemate was talking to Tara on the phone, and narrated what she was witnessing. Tara recalled, “He was going in and out of Bob and Charlie...He was wishing to be dead... He was screaming, and crying, and yelling at himself, telling himself what a bad person he was... He was stabbing himself with a pencil.”

Pam said, “I stayed there [at Bob’s house] all day and into the evening. At one point he was picking up lawn chairs and hitting himself. He hit himself in the head so hard he

knocked himself out on the ground unconscious for a couple minutes. I have a picture of that. I have a picture of him sitting in lotus posture communing with the Universe. I don't know what he was doing, but he was out there. And there were no drugs involved. It was like he was in so much pain, he was trying to end it. It was the first time I got a glimpse of why cutters do what they do."

After a few hours of being unable to calm Bob, Pam called the Psychiatric Emergency Team, a mobile response team operated by psychiatric hospitals. They transported him to the hospital where he had been admitted before. "They wacked him up with some serious stuff," said Pam.

She could not recall the name of the drug he was injected with, and I was unable to obtain those records. According to Pam, "he started having seizures... [because]...they overdosed him... It was serious." They kept him for two weeks. His Risperdal prescription was upheld at 6mg daily, which he continued for two more months. Pam said, "I know that he was being overdosed on [Risperdal]. I think it is appropriate that he come off of it."

Upon his release, Bob returned to the facility where he had lived with Fat Cat, but Fat Cat had been jailed in the meantime. About three months later, Bob packed his belongings, called his mother to come get him, and left on his own accord. Pam found him an upscale sober living facility, where he resides currently. He continued taking Risperdal for one more month after this hospital stay.

Bob ate poorly during the whole 13 months he was on 6mg of Risperdal, which he attributed to low motivation. "I lost a lot of weight," he said. He is 6 feet one inch tall and his average adult weight was 180 pounds. While on Risperdal, he ended up weighing 145 pounds. His own experience of Risperdal, and what he had read regarding its long-term adverse effects, made him question whether it was worth taking. "I felt I was going to be a vegetable," he said. He said he found hope in believing "I could find an alternative to [Risperdal] because it was not for me."

Pam made inquiries to her colleagues about any other treatment options that she

could try for Bob, which led her to information about the orthomolecular treatment of schizophrenia.

Pam supplied Bob with a high-grade multivitamin made by Pharmanex. He reduced his Risperdal dose to 3mg daily, all at once and by his own accord, and started taking the multi-vitamin daily beginning late summer, 2014. In early 2015, Bob told his mother he planned to discontinue the Risperdal and she suggested that he augment his treatment with a separate niacin supplement, and provided it for him. When he introduced the niacin supplement, he discontinued Risperdal, all at once. He found his appropriate niacin dosage to be approximately 300mg once daily. He flushed beyond comfort at doses of 700mg and 500mg.

At the time of the last interview in June 2015, he had been taking the multivitamin daily for 10 months and 300mg of niacin daily for five months, and had been off Risperdal for five months. "The vitamins help me feel better in all sorts of ways," he reported. He spoke of positive effects physically, emotionally, and cognitively. "Before I took anything I would sleep between 5-7 hours a day, and when I took Risperdal I would sleep...maybe 13 hours a day, and now it's about 6-8 hours a day," he said. "The ticks and muscle spasms ceased. I don't get as angry. When I was taking my Risperdal, I would get angry because I was forgetting things and being slow, and the muscle spasms...were pretty annoying, and I didn't want that to occur as my life."

Bob discussed his response further and noted that the "...[The vitamin protocol] feels better overall. I can think clearer. I can talk more clearly. During the Risperdal regimen, I was kind of mumbling my words. That went away...I retain more of what people are saying...I am able to use my head better...just thinking about day to day things, I'm more organized."

Bob discussed his experience with the psychiatrist. "I told [my psychiatrist] I was doing this test with the niacin and it seems to be working much better. He got all upset and said, 'You need to look for another doctor.'" Bob continued, "He told me to taper down

[on Risperdal]...When I went to see him again, he basically told me the same thing. He gave me another prescription." In Bob's words the psychiatrist said, "I told you to taper down and you just stopped...You need another shrink."

Bob has not seen that psychiatrist again. A major factor contributing to the changes in Bob's life was the removal of Fat Cat. Other factors included an improved diet, changing his living situation into a significantly better facility, quitting smoking marijuana and Spice, and replacing cigarette smoking with vaporizing liquid nicotine.

Pam and Tara both had positive reports about the effect of the vitamin protocol on Bob. Tara said, "He's...come back to life, emotionally, and [in] his sense of caring. He went out for Christmas and he bought ...presents for everybody, and they were so well thought out, and he was sure that we received them, and wanted to tell us about them, and was so proud of himself. He's been really showing more of his heart, and who he really is. He seems more balanced, for sure. It's leading to other things in his...lifestyle. He wants to live [an] all around healthier lifestyle and have some kind of exercise routine... It's easier to support him now because he's able to ask for it."

Pam said, "He's totally normal, like, to the point where I'm bugging him to go back to school." She noticed that he is happy and "excited, but...grounded at the same time," unlike previous episodes, when his good moods were "manic, and the things he [would] talk about [were] unrealistic...Since the vitamins...it's like he's waking up, slowly, having a more normal range of emotions." Pam added, "He's looking to his future and talking about it, and it doesn't seem to be in such a sci-fi sort of way, like daydreaming. Before it was all so, like, fantasy. And he's describing his states of mind. That's another thing he couldn't do, was talk about how he's feeling. Oh my God. [He used to be] unbelievably unable to talk about how he feels, and he's starting to do that." This year, Bob broke a six-year pattern of being either in jail or a mental hospital during his birthday. Pam said, "He was totally normal.

He had a great birthday. His sister came. We took him out."

Bob summarized some defining features of each of the three periods central to this inquiry, namely, before his schizophrenia diagnosis and Risperdal treatment, during his Risperdal treatment, and since introducing vitamins. "Pre-Risperdal was confusing, a lot of emotional baggage...While on Risperdal, [I was] sluggish, moody, not wanting to do anything, depressed. Like I said, memory loss was a big thing, tremors in my hands, and just not feeling right, not feeling correct, not feeling the way I felt during my life. And this pertains strictly to Risperdal...While on the vitamins, for the most part uppity, active, wanting to learn things, spending time with family members, being able to retain what I read better...To put it in one word, just better, more complete."

## Discussion

The interview data constitute important information about the effects of Risperdal treatment, psychiatric services, and orthomolecular-based treatments. A brief acknowledgement of the sampling process and outcome is worthwhile. Recruitment efforts were stymied in various unexpected ways, and the process highlighted the difficulty in accessing the population of people with schizophrenia. People with this diagnosis are seen as fragile and volatile, and psychiatrists are reluctant to disclose any information about their patients because of liability concerns. I contacted three psychiatrists who had personally employed the orthomolecular treatment, but none was willing to contact their patients or former patients about the opportunity to participate in the study. I found Dale and Bob after Andrew Saul, an orthomolecular medicine scholar and committee member on this project, published my call for participants in the Orthomolecular Medicine News Service. As noted, Dale did not permit me to contact his drug-prescribing psychiatrist, and even with Bob's permission, neither of his drug-prescribing psychiatrists was willing to interview.

To gain a better understanding of the orthomolecular treatment of schizophrenia, and

for it to become more accessible, documenting cases of people using it is important, including having the professional observations of psychiatrists. Currently, most orthomolecular practitioners are naturopathic doctors, holistic doctors, or general practitioners, not psychiatrists. Psychiatrists' education about nutrition in medical school is not extensive, so they are unlikely to consider a nutrient-based treatment. Therefore, few in any professionals are formally trained to both recognize psychiatric conditions and use orthomolecular treatments. Dale's orthomolecular practitioner, Christina Bjorndal, is among a small group of holistic doctors who have included psychiatric conditions in their treatment scope. In the U.S., prescription drugs are considered the standard of care and doctors who do not follow that mandate can be liable, which further mitigates against people trying a different treatment approach and/or admitting doing so.

The inability to access more of the schizophrenic population significantly limits the generalizability of the findings, as does the very small case history sample. Having two cases allows for preliminary conclusions that might extend beyond a single individual, but broad generalizability is not possible. The absence of the psychiatrists' accounts limits what can be understood of Dale and Bob's symptoms at onset, the rationale for choosing Risperdal instead of other drugs, as well as why dosages changed when they did. It is possible that Risperdal had beneficial effects observable by professionals that neither Bob nor Dale, nor their families could observe. Given that Dale and Bob had overall negative experiences with the psychiatrists, any value from those services may have gone unmentioned.

That Dale and Bob agreed to spend hours interviewing suggests that they were passionate about the orthomolecular treatment, functional and courageous enough to talk about it, and ready to praise it. Granted, their passion may be rooted in the experience of how well it has worked for them. Yet, if there are people for whom the orthomolecular treatment was not helpful, they were unlikely to respond to a call to participate, which is an inherent bias in

this study. Thus, the sample is unreflective of many individuals with schizophrenia, and the results do not necessarily suggest that what worked for them will work for everyone with schizophrenia.

Dale and Bob represent a demographic that is fairly typical of schizophrenia, although epidemiological findings on this condition are mixed. To the degree that Dale and Bob are representative of the schizophrenia population, what they have experienced using Risperdal and an orthomolecular treatment might translate to others. Although relatively typical of people diagnosed with schizophrenia, two data points provide little external validity, but the value of case studies is that they can have a high degree of internal validity, the certainty that the variable under investigation is accounting for some of the changes being measured or reported. Capturing comprehensive narratives from multiple parties can ensure internal validity to a far higher degree than would broad surveys.

In understanding the findings, it is clear Dale and Bob each experienced significant recoveries from schizophrenia due to the orthomolecular treatment and many other factors. Whether these individuals can be considered cured depends on how cured is measured. According to Bjorndal's assessment using the short form of the PANSS, Dale is cured or at least in remission. According to Bob's mother, he is "totally normal." By Abram Hoffer's standard, however, they cannot be considered fully recovered until they start paying taxes.<sup>48</sup> Nevertheless, the improvements in functioning and emotional stability that Dale and Bob both reported are remarkable.

Factors other than the vitamins clearly supported these individuals' improvements. Fat Cat's exile from Bob's life helped Bob realize that he could live more independently, and it marked the end of anyone's calling him by the name Charlie, a persona that was the vehicle for Bob's most destructive and delusional behaviors. Dale participated in nondual oriented psychotherapy. Both have been fully supported financially throughout their whole process with schizophrenia, and they have not had to deal with the stress of having a job

while focusing on recovery.

Employment rates tend to be low in people with schizophrenia,<sup>52</sup> which appears to be due to a variety of factors. The potential connection between unemployment and Risperdal usage goes unexplored because of the assumption that unemployment in people taking Risperdal must be attributable to their schizophrenic conditions. What Bob and Dale revealed about their experiences on Risperdal suggest that its debilitating effects, especially sleeping 12 hours a day, having no energy, and being impaired in reading and writing, would make anyone unfit to fulfill even very simple jobs.

Dale lowered his dosage of Risperdal, and Bob came off of it altogether, which can account for some of their improvement, given how damaging that drug was for each of them. Ascertaining which effects were due to the reduction or removal Risperdal and which were due to the introduction of vitamins is difficult, because these events happened together for Dale and Bob. Had Risperdal been reduced without the introduction of an orthomolecular treatment, it is likely that they would have experienced an increase in their energy levels, a normalization of sleep patterns, and regained some ability to concentrate. Yet, they may have experienced withdrawal symptoms and possibly relapsed into schizophrenia, which is common when trying to come off of antipsychotics.<sup>53</sup> Although a variety of factors were important contributors to recovery, Bob, Dale, and the friendly observers were confident that the orthomolecular regimen was indispensable, and they attested to improvements such as mood stability coming immediately upon introducing it.

The orthomolecular treatment has clearly been the favorable treatment over Risperdal. For Dale, who is still taking a small dose of Risperdal daily, the orthomolecular treatment in conjunction with a low dose (1.5mg daily) of Risperdal has had better effects than Risperdal by itself; Dale's plan is to taper and discontinue Risperdal, and continue with the orthomolecular protocol. Bob, who discontinued Risperdal after taking 6mg for 13 months, has experienced much more favorable effects

with an exclusively orthomolecular-based treatment. Many other variables have influenced Dale and Bob's recoveries for better or worse, as well.

Factors that stifled Bob and Dale's recovery processes included inimical relationships with psychiatrists, effects of Risperdal, poor diet, and negative environmental influences. Factors contributive to recovery included an improved diet, lowering or stopping Risperdal intake, an orthomolecular protocol, familial support, and the removal of negative environmental influences. Their experiences have resulted in a higher level of maturity than before the schizophrenic episodes, confirmed by all the friendly observers. It is possible their processes of growth through schizophrenia could have been less painful and debilitating had their experiences been interpreted in a validating way and their bodies treated with natural molecules from the onset of symptoms. It is also possible that their heightened maturity suggests their bout with schizophrenia contained growth potential all along.

Among the most surprising findings was that, before any treatment, Bob and Dale had personalities, talents, and lifestyles that were quite different from one another. Their presenting symptoms at the time of diagnosis differed too. Yet, while taking Risperdal, they became similar to one another and were confined to the same limitations. When they introduced an orthomolecular protocol, ceased Risperdal intake, and made a variety of positive changes in their lives, their individualities became evident again.

Bob's childhood was extremely tense. His father's physical violence toward his mother traumatized him. He did not share many details about his childhood; discussing it appeared to make him uncomfortable, confirmed by his mother and sister. Read et al.,<sup>54</sup> found the relationship between childhood trauma and schizophrenia to be "strongly related." Spence et al.,<sup>55</sup> compared 40 individuals with schizophrenia to 30 individuals without it and found that "childhood exposure to trauma was significantly more common in the schizophrenia group." Bob's case history corroborates this evidence.

Bob's family's lack of discernment around Bob's readiness to live independently was costly for everyone. Historically, parents have often been blamed for their children's schizophrenia; this is no attempt to support that way of thinking. However, the cases of Dale and Bob highlight that parents of young people exhibiting abnormal behavior may need supernormal judgment about when to intervene and with what kind of support. Kbit<sup>56</sup> surveyed 228 family members of 61 individuals with schizophrenia who had used orthomolecular treatment, neuroleptics, ECT, and talk therapy and found that 42% of respondents considered the orthomolecular treatment to be of "great value." Only 24% of respondents described neuroleptics in the same way. It is reasonable to assume that Dale and Bob might not have reached such extreme states of dysfunction had they been supported with vitamins much earlier.

Dale's childhood was more wholesome than Bob's. His primary challenge was when he entered middle school and the other students were mean to him, which prompted his candy addiction involving heavy consumption every day. Dale designated that pattern as the beginning of being unwell. Fortunately it only lasted approximately three years, but in such a biologically formative period, this likely had damaging effects on his physical development. Studies that have looked at schizophrenia prevalence and diet in different areas of the world showed that high sugar consumption is predictive of worse outcomes in schizophrenia.<sup>57, 58</sup> There is also evidence that early malnutrition can disrupt normal behavioral development.<sup>59</sup> Vitamin supplementation and/or a nutrient-dense diet could have been fortifying and supportive of Dale's stability.

Marijuana was a factor in Bob's and Dale's lives leading to the onset of their schizophrenic symptoms, but it seemed to play a different role for each of them. Bob's 11-year-long frequent usage of marijuana starting at age 12 may have been used to manage painful psychological experiences. Tara observed a "disconnect" between Bob's smoking marijuana and expressing the persona named Charlie.

There appears to be a link between marijuana usage and schizophrenia<sup>60</sup>, but no evidence suggests that it is causative. For Bob, marijuana was as a natural sedative, and it never triggered psychosis in him. It possibly provided an emotional atmosphere that guarded him from acknowledging painful psychological material. His usage was excessive, however, and at times it diminished his lucidity.

Dale's marijuana usage was not as heavy as Bob's. He used it only occasionally in the years leading to his psychotic breaks. Yet, the incident when Dale went to school for his final exam and was having delusional thoughts, which led to him attempting to punch a police officer, involved marijuana. While his distortions of reality were already reaching an extreme degree, he did not become violent until he drank beer and smoked marijuana, indicating that when a person is already delusional, those substances can worsen matters. For some people, marijuana can bring about delusions and paranoia. Freeman et al.<sup>61</sup> tested the effects of THC, the principal ingredient in marijuana, given intravenously, by comparing 121 people who already had paranoid ideation. Subjects were randomized into either a placebo group, a THC only group, or THC preceded by a stimulus that could trigger paranoia. The highest rates of paranoia were in the THC groups, and the researchers claimed to have "definitively demonstrated that [THC] triggers paranoid thoughts in vulnerable individuals." Dale's case history supports this conclusion because he was vulnerable, ingested marijuana, and became more paranoid. Bob's case history, however, challenges the idea that marijuana causes paranoia; for him, marijuana quelled paranoia. The major difference between Bob's and Dale's marijuana usage was that Bob smoked multiple times daily, and Dale smoke less than once weekly, indicating that marijuana may have a greater paranoia inducing effect in people who are not as familiar with its effects.

At least three of Bob's psychotic breaks were iatrogenic, induced by a drug. Twice, Bob had terrible reactions to Xanax, a drug he was prescribed hastily, with no psychological inquiry. This was one of the alarming

discoveries of Bob and Dale's stories: The justifications for being prescribed drugs were obviously mere habit of a psychiatrist, and the dosage determination seemed to be an arbitrary process. Whether Bob's first two major psychoses were due directly to Xanax or the sleep deprivation that Xanax caused is unclear, but directly or indirectly, Xanax, as Pam said, "made him insane." In the Xanax experiences and the Spice-induced psychosis, the common element was a basic destabilization of his personality and a loss of control over his actions, to which these synthetic chemicals contributed.

Dale and Bob both reported being severely sleep-deprived in their episodes of psychosis. Sleep deprivation has long been understood to produce schizophrenic-like symptoms.<sup>62</sup> These case histories emphasize the imperative for regular sleep patterns in people at risk of schizophrenia. They also indicate that the inclusion of nutrients known to support sleep regularity into an orthomolecular protocol may be beneficial. Tryptophan is one of these nutrients, an essential amino acid and biochemical precursor to niacin and serotonin, which are critical chemicals in multitudinous neurological activities.

The presenting symptoms at the time of Bob's and Dale's schizophrenia diagnoses are not clear because the psychiatrists who made the diagnoses were unwilling to be interviewed. Bob's second psychiatrist, who did not make the initial schizophrenia diagnosis, sent me psychiatric notes, which included simple notes about Bob needing to find a job and his history of legal troubles. Notes also included, "stop the niacin trial," "not sure how truthful he is," and "told to find another psychiatrist!" He noted that Bob had memory problems, but attributed them to Bob's mental status, and wrote that there were no side effects of Risperdal. He had written additional prescriptions for the benzodiazepine Klonopin and sedative Lunesta, drugs that have never been studied in conjunction with Risperdal, but Bob reported never taking them. He wrote that Bob reported a growth in his right breast, which may have been an inflammatory condition known as idiopathic granulomatous

mastitis (IGM), and that Bob was concerned it may have been associated with Risperdal. This was "confusing" to the psychiatrist, despite there being documentation of cases of Risperdal associated IGM.<sup>63</sup> This psychiatrist never replied to requests for an interview. Based on the accounts of Bob, Pam, and Tara, Bob's symptoms at the time of diagnosis were anxiety and delusional thoughts. Dale was diagnosed with schizophrenia when he voluntarily admitted himself to the hospital. He was neither delusional nor hallucinating. He did not exhibit any negative symptoms; instead he was experiencing intense emotions, and he had the volition to seek help. It was only after he was detained in the isolation room that he started experiencing delusions and hallucinations.

Another striking finding was the attitudes held by Dale's and Bob's psychiatrists. The participants' accounts portrayed insensitivity, closed-mindedness to other treatment options, and extreme reactions to Dale's and Bob's choices to lower or discontinue Risperdal and introduce a vitamin protocol. In fairness to the psychiatrists who treated Dale and Bob, their narratives were never captured. The stories about these relationships are one-sided. Yet from the perspective of Dale and Bob, their psychiatrists were not helpful. For Dale, they were harmful. Neither felt safe in meetings. They reported never talking about anything meaningful with regard to their psychological development. Their descriptions of the meetings implied that the psychiatrists attempted to make objective observations from an emotional distance, which squandered the opportunity for connection and trust. Dale's account of the meetings he had with his second psychiatrist was shocking. It portrayed a treatment approach that did not even account for the possibility of recovery, let alone nurture it. The psychiatrist had an unsettling effect on Dale, and exacerbated Dale's nervousness by repeating, "You're not well," and similar comments.

Bob's psychiatric hospital stays and interactions with psychiatrists, like Dale's, did not foster his sanity. He was bothered by

having to share an environment with people who were drooling and screaming. He said that his psychiatrists “didn’t really talk to [me].” Perhaps what he meant was that they never touched on any significant topic. With minimal knowledge of his psychological state and no knowledge of his brain state, he was prescribed Risperdal and titrated up to 6mg, which was the highest dose ever studied in the drug approval trials. Bob never understood why the dose was being increased. In those trial periods, people who took Risperdal at 6mg daily were studied for a month;<sup>64</sup> Bob was on Risperdal at 6mg for 13 months.

One of the few differences between Dale and Bob on Risperdal was that Dale’s nipples leaked and Bob’s grew lumps. They both experienced low energy, mood, motivation, and concentration as well as an unreliable memory and an inability to read or write, which they and their friendly observers attributed to Risperdal. They also failed to maintain their physical hygiene. Their sleeping patterns were comatose-like, rendering them seemingly unable to wake at any stimulus, and neither reported remembering dreams in that phase. Worse, neither felt well rested upon waking. These effects dramatically reduced their productivity, learning, intelligent expression, and participation in the world.

Before taking Risperdal, Bob had read many books in the curricula of a prestigious military school and the densely intellectual works of great philosophers. He also memorized complex military operations. Dale had keen social intelligence, was completing his university work easily, and had a proclivity to reflect on difficult philosophical questions. Dale was also drawn to the mystical realms of reality; he was curious about different meditative states, and he was able to enter them naturally. All these capacities were undermined by Risperdal.

Bob had lowered his Risperdal dose to 3mg before the interviews commenced. After our second interview, he lowered his dose to 1mg, which he and his mother had planned prior the interviews. He discontinued it altogether after the third interview. In his first two interviews, while on 3mg, getting him to

elaborate on any of his answers was nearly impossible. Neither of the first two interviews exceeded 25 minutes. The third interview was different. He was more talkative, and the interview lasted almost 40 minutes. Our fourth interview, at which point he had been off Risperdal for over eight weeks, lasted over an hour. His voice was at a slightly higher pitch. He talked faster. He was coherent and light-hearted, and he elaborated on everything he said. Our fifth interview had a similar quality. He was excited to discuss his aspirations of going to school in the coming semester and potentially entering the high-tech industry.

Dale and Bob both reported diminished confidence in social situations while on their highest doses of Risperdal. Their participation in the world was minimal; they were both reluctant to venture out of their homes. Also, Risperdal did not completely inhibit the appearance of strange psychological material. Dale had a very detailed hallucination while taking Risperdal, and Bob’s persona Charlie expressed himself on many occasions. They experienced what Prousky<sup>65</sup> described as the gravest costs of neuroleptic drug treatment, “the resulting existential oppression that weakens their spirit and undermines their capacities to handle existential concerns that impact all of us as we make our way in this world.”

The results that this study has produced have relative value, although they may have no bearing on many cases of schizophrenia because of the small sample and the specific demographics of the primary participants. The orthomolecular protocols that the participants were taking were not identical, and Dale’s was an especially wide array of vitamins and minerals, which makes it difficult to determine which particular nutrients affected schizophrenic symptoms, and which served other purposes. And it cannot be said for sure that the orthomolecular treatment has prevented Dale’s schizophrenic symptoms from returning, given that he has not completely discontinued Risperdal. Case histories of individuals who have completely switched from drug treatment to an orthomolecular treatment, as Bob did, need to be continuously collected and published, so that this experi-

ence can continue to be understood.

Even with only two primary participants, the multiple case study approach was congruent for the factors under investigation, namely the Risperdal and orthomolecular treatments of schizophrenia, in terms of accounting for the effects that Bob and Dale have experienced, and those findings were consistent with the literature, indicating that they truly represent the phenomena studied. The method has generated data in a relatively reliable way by using multiple sources. The generalizability of findings is limited to middle-class, financially supported, young adult males. This study represents depth, but not breadth, of investigation. By aggregating case studies that are conducted with a similar protocol, however, breadth and generalizability could be achieved. The case study method may be superior to controlled trials for understanding the effects of the orthomolecular treatment of schizophrenia because of the individualized nature of the treatment. If Dale and Bob were part of a controlled trial and given a standard dose of 3g daily, for example, Bob would have responded to the dose, but Dale may not have, as he has needed 11g daily.

Although it was unplanned, the fact that Dale and Bob had taken the same neuroleptic strengthened the findings because the type of drug treatment can be a significant variable. Had they taken different kinds of drugs, commonalities between the effects of the drug treatment would likely have been more difficult to find. Although all neuroleptics are similar in their primary mechanism, some have unique effects based on the exact chemical constitution of the product. Future studies akin to this one, however, should purposely recruit participants who have taken the same drug.

The case histories are important contributions to the literature, especially considering the decline of case studies in favor a larger survey or experimentally designed studies in schizophrenia literature. The absence of psychiatrists' testimonies is a blind spot in the analysis of Dale's and Bob's histories. Although Bjorndal's perspective has been invaluable, she is not a trained psychiatrist, and

her observations of Dale's symptom severity might not hold as much weight as a psychiatrist's anamnesis. It will be important that future researchers conducting case studies on neuroleptic and/or orthomolecular treatments secure interviews with psychiatrists.

Future studies should collect much more detailed dietary profiles. Poor eating habits were implied in Dale's and Bob's case histories, but specifics were not obtained, preventing any strong conclusions from being drawn about the role of their general nutrition in the course of their schizophrenia experiences. Diet needs to be documented as thoroughly as possible in future studies on the orthomolecular treatment of schizophrenia because this branch of medicine deals with vitamin deficiencies, which ultimately come from deficiencies in the diet. Whether vitamins work better when consumed through foods or through pills will be an important area of research for orthomolecular medicine. It seems possible that the extremely high doses of niacin that especially Dale has been taking could be partially reduced if niacin-dense foods, which his body might assimilate more efficiently, were to be introduced.

Support for this project from the orthomolecular field, despite initial promise, was surprisingly low, given that this treatment is still struggling for recognition. The late pioneers of orthomolecular psychiatry would likely be disappointed at the futile attempts of orthomolecular practitioners and scholars to generate interest in people qualified to participate in this study. This was a chance for the orthomolecular treatment to be showcased, and it has been, but not as significantly as it could have been had there been five cases, which was the original plan. Although orthomolecular psychiatrists are probably very busy, it would behoove them, the orthomolecular field, and people seeking treatments other than drugs, to publish case histories often, as Hoffer did.

One very important development in researching biological treatments of schizophrenia needs to be technology for biological measurements. Orthomolecular physicians need to develop biological markers to test vi-

tamin and mineral levels in individuals. Vitamins can be prescribed in exactly the right amounts if precise detections of deficiencies can be made. Adjusting vitamin dosages to the individual's progress could also be a more objective process if biological measurements are developed. Also, with the increasing sophistication of genetic research, there may be a way to identify markers, or possibly specific genes of people who are prone to niacin and other vitamin deficiencies.

Another potential avenue of research can be something this study lightly investigated, the connection between using orthomolecular treatment for schizophrenia and maturing through the schizophrenic experience. If schizophrenia contains growth potential, what unique effects of the orthomolecular treatment allow for the growth through schizophrenia to still be experienced without letting the symptoms become overwhelming? A better understanding of the psychological and emotional effects of the orthomolecular treatment will help clarify how it helps a person mature through schizophrenia, as Dale and Bob have, without totally robbing them of the opportunity to be challenged by it, glean its value, and make necessary changes in, for example, a world view.

Finally, one of the most important ramifications for future research is in the area of adverse effects of Risperdal, and neuroleptics in general, as well as the process of tapering from these drugs. It may be unethical to subject people to taking these drugs merely for the sake of an experimentally designed trial. Therefore, case histories and qualitatively designed studies involving people who have already used these drugs will be a fertile approach for generating data on the many effects of these drugs. People who have or are related to someone who has schizophrenia need to know that the effects of neuroleptics can be devastating. They also need to know that approaches to conceptualizing and treating schizophrenia other than the biomedical model and its drug treatments exist.

The central tenet of orthomolecular medicine is that the body rectifies itself when given the right nutrients in the right amounts.

The resultant attitude toward schizophrenia is that it can be corrected, and that it is not due to anything wrong with the person. Schizophrenia is a symptom of a malnourished brain, not a broken brain. Perturbing organic brain chemistry, as psychiatric drugs do, is not the way to support brain function, according to orthomolecular medicine. The disabling symptoms of schizophrenia disappear upon nourishing the brain. This has, so far, been the case for Dale and Bob.

There are two basic ways to make symptoms disappear in current biological treatments of schizophrenia—obliterate them or correct their cause. Orthomolecular medicine deals with the cause. In contrast, the dopamine hypothesis, which has justified all development and usage of neuroleptics, was never proven to be the cause of schizophrenia. What has been shown, in a gargantuan repository of literature, is that dopamine-inhibiting agents stop many schizophrenic symptoms. But they also stop many other processes, possibly including much of what ensues from dopamine transmission. The evidence that neuroleptics stop schizophrenic symptoms does not validate the dopamine hypothesis of the etiology of schizophrenia. When a drug is deemed efficacious, the question needs to be, what, exactly, are its effects? There is no such real thing as a side effect; there are adverse effects. For Bob and Dale, these adverse effects included their inability to concentrate and their excessive sleep while on Risperdal. That the orthomolecular treatment does not disrupt but supports organic brain chemistry and seldom produces serious adverse effects, renders it worthy of trial for everyone diagnosed with schizophrenia.

The criteria of symptoms for schizophrenia are far too various to assume that an isolated chemical process, be it faulty dopamine transmission or excess adrenolutin production, will ever be discovered as the etiology of schizophrenia. Although the DSM-5 tightened the diagnostic criteria for schizophrenia, it still includes broad symptoms of behaviors and psychological dynamics. Yet the assumption in conventional psychiatry that a particular chemical process underlies all these

different symptoms remains, and the search for the right drug continues. The current DSM instructs psychiatrists to detect two of five major symptoms, and one of them has to be delusions, hallucination, or disorganized speech; the other can be any of those three, disorganized behavior, or any of the negative symptoms, including diminished emotional expression and avolition. A person experiencing disorganized speech and avolition is likely to have much different brain chemistry than one who is hallucinating and delusional. Yet both would be diagnosed with schizophrenia and given a drug that inhibits dopamine transmission. This would be the wrong treatment for at least one of them. Even when the orthomolecular treatment only included niacin, it had broader effects on the brain than neuroleptics, because niacin plays a role in so many chemical reactions. Now that the orthomolecular treatment has evolved to include most, if not all, of the vitamins, it can potentially account for treating the many variations of schizophrenia.

The orthomolecular attitude does not tend to attach a pathological stigma to schizophrenia. Having a brain that is nutrient-deficient is nothing to be ashamed of. This attitude also tends to create optimism toward the potential for recovery, which stems from the understanding that the body can rectify itself if given what it needs. The drug treatment paradigm rests on the assumption that the body cannot heal itself and therefore needs the intervention of synthetic chemical compounds. An outcome of this assumption is a pessimistic attitude toward the possibility of recovery, and in the worst cases, a demeaning and limiting relationship with the individual experiencing schizophrenia, similar to what Bob and Dale experienced. The consequent pessimism and optimism of these fundamentally different biological approaches are likely significant factors in healing, and were reflected clearly in Dale's experience. After meetings with his drug-prescribing psychiatrists who tried convincing him he needed to be on Risperdal for the rest of his life, Dale was disheartened. In contrast, he was inspired after his meetings with Bjoerndal, who saw a

bright future.

If schizophrenia contains growth potential, what is the value of introducing an orthomolecular treatment that could reduce those symptoms? The orthomolecular treatment can provide the emotional stability necessary to process difficult psychological experiences often involved in development. The vitamins have never been shown to suddenly decimate symptoms in the way that drugs do. They take some time, and in that time, the person has the opportunity to seek the value in the strange psychological contents of schizophrenia, and determine their meaning, with the emotional stability that the orthomolecular treatment seems to provide.

## Conclusion

This study yielded important findings relevant to the conversation about schizophrenia, Risperdal treatment, and the orthomolecular treatment. The orthomolecular treatment of schizophrenia has been indicated as more favorable and sustainable than Risperdal in two individuals with schizophrenia. These individuals did not merely recover from schizophrenia but have experienced maturation as a result of the schizophrenia process, which came to fruition after introducing orthomolecular treatment. Their long-term usage of Risperdal severely diminished their capacities to function, learn, introspect, express themselves, connect with other people, and participate in society. Individualized vitamin protocols have fostered their overall physical and mental health, supported emotional stability and social functioning, and prevented the onset of overwhelming psychotic symptoms. The case histories suggest that individuals who are supported with the right molecules and a validating, growth-oriented context in which to interpret their experiences, might actually overcome their schizophrenia to enjoy a more satisfying and meaningful existence.

## Competing Interests

The author declares that he has no competing interests.

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