

*Full-Length Article***The Effects of the Bonny Method of Guided Imagery and Music (GIM) on Interpersonal Problems, Sense of Coherence, and Salivary Immunoglobulin A of Adults in Chemical Dependency Treatment**Annie Heiderscheit<sup>1</sup><sup>1</sup>*Augsburg College, Minneapolis, MN, United States of America***Abstract**

The purpose of this study was to evaluate the effectiveness of the Bonny Method of Guided Imagery and Music (GIM) on interpersonal problems, coping measures and immune function in 19 adults in chemical dependency treatment for an average of 43 days. Psychological measures included the Inventory of Interpersonal Problems Short Circumplex Form (IIP-SC), the Sense of Coherence Scale (SOC) and physiological measure included salivary immunoglobulin A. Pre-test measures were collected at the initial interview session and post-tests at the final GIM session. Experimental subjects received one GIM session a week during their treatment. Results show significant decrease on the domineering, cold, and non-assertive subscales of the IIP-SC and on the manageability subscale of the SOC scale. The physiological measure of sIgA did not show a significant increase. GIM appeared to be effective in addressing issues underlying substance abuse, in addition to showing a positive impact on physical health.

**Keywords:** *Bonny Method of Guided Imagery and Music, music therapy, Chemical dependency, substance abuse treatment*

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**Introduction**

Chemical dependency is a common disease encountered in healthcare and modern medicine. The National Institute on Drug Abuse (NIDA) estimates substance abuse costs the United States over \$600 billion each year [1]. According to the World Drug Report, “drug use continues to exact a significant toll with valuable human lives and productive years of many persons being lost” [2]. The United Nations Office on Drugs and Crime estimates that in 2012 there were 183,000 drug related deaths globally [2]. In the past 30 years the number of overdoses has risen 300 percent [3]. In addition to the lives lost and the cost burden that substance abuse exacts around the world, there are a myriad of ways this issue impacts lives. Substance abuse leads to the increased spread of HIV and AIDS, imprisonment, [2], increased criminal activity, higher incidences of violence, abuse and neglect, frequent absences from work, difficulties maintain employment, [2, 4] and strained relationships [2,3]. The impact of addiction and substance abuse on people’s lives and in society is evident. Global leaders examining this data also recognize that there are no easy or simple answers to the problem of substance abuse and addiction [2].

The issue is complicated even further by the fact that the genesis of substance abuse and addiction varies from person to person and there is not one explanation or cause for why people become addicted to drugs or alcohol [5, 6, 7, 8]. In fact, there are multiple risk factors associated with substance abuse and addiction including: an individual’s psychological state (using the substance to relieve stress, anxiety or tension) [9, 10, 11, 12], psychopathology [10,13, 14, 15], family history, biology, and genetics [10, 16, 17], social and cultural influences [13, 18, 19], and medical conditions [20, 21]. Risk factors provide insight into areas of vulnerability for individuals, but they do not tell the full story surrounding substance abuse and addiction. To understand this further means to recognize what leads to engaging in substance abuse.

Researchers report individuals frequently engage in using a substance as a means of coping with psychological, emotional, or interpersonal issues they feel ill equipped to manage [9, 10, 11, 12]. Engaging in substance use or abuse to manage these issues does not bring resolution for these issues and often brings additional struggles and complications into the process [11, 12]. These may include marital and family problems, work related issues, increased substance use, chronic health concerns related to substance use, and financial or legal problems. Addressing these issues is a necessary component of treating the addiction and helping the individual change these maladaptive ways of coping [9, 10, 11,12]. Treatment therefore requires the need to address the physical, emotional, mental and spiritual aspects of recovery in order to foster a lifestyle change [3].

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Literature surrounding the Bonny Method of Guided Imagery and Music (GIM) incorporate the use music and imagery in the treatment of psychological and physical diseases. Previous research has demonstrated that both music and imagery effect both psychological and physiological aspects of human functioning such as improve sense of coherence and management of emotions [22] fibroid tumors [23], blood pressure, hypertension and self-concept [24], mood, emotional expression, cortisol and immunological control [25], depression and beta-endorphin levels [26], mood and cortisol [27], mood and quality of life [28], rheumatoid arthritis [29], perceived outcomes in cancer survivors [30] and cardiac rehabilitation [31]. These various studies indicate that further systematic investigation into the psychological and physiological effects of the combined use of music and imagery is warranted.

Additionally, because GIM allows for the release of emotions and emotional memories, it seems warranted to examine further the effects of this method on measures related to psychological and physiological functioning [32, 33]. The vast majority of studies incorporating GIM are case studies that lack replicability. Despite the amount of anecdotal evidence that exists in the GIM literature, no experimental research investigating the method in individual work in chemical dependency treatment has been published to date. The impact of chemical dependency in American society is significant. Additionally, individuals dealing with chemical dependency issues also face increased risk for mental health and general physical health issues. Given the literature that does exist on GIM consists mostly of case studies and the impact of chemical addiction and the health related issues that often accompany it, further study is warranted with more rigorous designs. The GIM allows for individuals battling an addiction to identify, explore and process through the issues contributing to the substance use [33]. The purpose of this manuscript is to illustrate how the GIM can be effective in addressing these underlying issues of chemical addiction.

#### *Substance abuse: A healthcare crisis*

A major issue of concern in healthcare today is substance use. One hundred and thirteen million individuals the age of 12 and over currently engage in substance use [34]. Thirty-three million in this group engage in binge drinking, and 12 million are considered heavy drinkers population and an estimated 22.2 million persons were classified with substance dependence or abuse [34]. In 2012, the United States Surgeon General state that, “an estimated 19.5 million adult Americans have medical, social, and personal problems directly related to the use of alcohol” [35]. The 2012 National Survey on Drug Use and Health (NSDUH) estimates that 20.1 million adult Americans currently use illicit drugs, which represents nearly nine percent of the United States [34].

The Executive Office of the President and Office of Drug Control Policy (ONDCP) reported in 2011 that the economic costs of drug abuse in the United States has demonstrated a 5.3 percent annual increase since the early 1990’s [35]. The study indicates that the overall cost of drug abuse to society increased by a rate of 5.9% annually [35, 36]. These statistics illustrate the widespread and national problems of substance use and abuse [7]. The statistics seem overwhelming and yet substance abuse is rarely diagnosed [14] and even the experts are still in disagreement as to whether it is a disease or a behavior problem [7]. While the issues of diagnosis and disease classification, are far from resolved, it does not override the need to address the needs of those entering into treatment.

In substance abuse treatment, individuals present a variety of needs. The scope of these needs range from physical dependence to psychological dependence [37]. Addiction is a complex disorder that is influenced by psychological issues, stressful life events, personality traits, and genetics [10,16, 17]. The picture is also complicated by the fact that substance abuse and use suppresses immune function and causes and contributes to a variety of health issues [20, 21]. The negative impact of substance use is not limited to physical health, but also impacts emotional and psychological well-being [3]. Therefore, the psychological aspects must be addressed in order to positively influence one’s physiology [38, 39]. The individual faces the stressors that may have led to using the substance, along with the stressors that have surfaced as a result of the use of the substance [3]. Addressing the issues that lead to the substance abuse as well as the interpersonal, mental and physical health issues is imperative for this clinical population to obtain and maintain sobriety [3, 33].

#### *The Bonny Method of Guided Imagery and Music (GIM)*

The GIM is a method, which involves listening to music in a relaxed state to elicit imagery, memories, experiences, symbols, feelings, creativity, therapeutic intervention, self-understanding, awareness, and spiritual experience [40]. GIM is a method of exploration that incorporates specifically selected sequences of classical music [40, 41]. Listening to therapist-selected music in a relaxed state allows the imagination to come into conscious awareness, with these experiences being shared with a guide [41]. Pickett writes that, “GIM reaches the deep layers of the psyche and brings that material to conscious awareness for examination and resolution” [42].

#### *Guided Imagery and Music and Chemical Dependency Treatment*

The GIM was developed from Helen Bonny’s work along with a group of research scientists at the Maryland Psychiatric Research Center in the late 1960’s [43]. The original research

focused on the use of LSD and other psychedelic drugs in therapeutic interventions for chemically dependent and addicted patients. Bonny was invited to become a part of the research team to select the music and develop music programs to be incorporated in the therapeutic experience. Bonny reports that “the team of therapists at MPRC have experimented with the use of music in more than 600 drug sessions during a period of several years and agree that music is a very effective stimulus and complement to drug action [32]. Bonny’s experiences at MPRC were the impetus for the development of the GIM [32]. Bonny discovered that individuals who imaged with the use of LSD developed a selective amnesia recalling little of the session. In contrast, the absence of LSD allowed the imager to easily recall the experience [40].

Additionally, in the early 1970’s the political and national climate had changed. An anti-drug campaign was moving to the forefront and psychedelic drug research soon became suspect, discouraged and experienced a lack of support by the public and mental health professionals [43]. These factors fostered the exploration of non-drug stimuli for the imagery experience; thus began Helen Bonny’s exploration into the use of music as the therapeutic catalyst [32].

The earliest account of GIM with clients in chemical dependency treatment is described in a case presented by Bonny and Tansill in their 1977 paper entitled, *Music Therapy: A Legal High* [43]. The case study provides accounts of the six session series that occurred over a five-month time period. During the course of therapy, the client also entered a vocational training program, secured his own housing, and began to develop social relationships. Following the course of treatment, the client demonstrated a significant decrease in illness severity, according to an overall MMPI score. The client also demonstrated significant improvement self-esteem and ego strength [43].

Despite the fact that GIM originated from sessions with individuals undergoing drug treatment, limited exploration and use of the method has continued to be limited. Clinicians that have utilized the GIM in this clinical area acknowledge a variety of benefits. Summer purports that GIM can assist the client in achieving sobriety (letting go), which is the first step in the twelve step Alcoholics Anonymous (AA) process [40]. Summer further adds that GIM brings to light issues that often interfere in the therapy process and in achieving sobriety. Furthermore, she suggests that “GIM changes the basic addictive formula from tension – alcohol – tension reduction to tension – GIM – tension reduction” [40].

Borling proposes a rationale for the use of GIM in the recovery process of addictions. He suggests that GIM can assist in dealing with emotions that have long been denied or repressed, often the very emotions that may have fueled the addiction [44]. Pickett described her work with a woman with a dual diagnosis, including addiction to alcohol. She identifies that it was during the course of the GIM sessions that the

client began to confront her feelings of rejection, deprivation and abuse. Pickett purports that the creative process of BMGIM allows the client to discover his/her own human potential and ability to heal [45]

Skaggs in her book entitled, *In Finishing Strong: Treating Chemical Addictions with Music and Imagery*, provides accounts and case illustrations of her work with adults in chemical dependency treatment. She identifies that the complexities and scars of addicted individuals are often the result sexual, emotional, physical, and verbal abuse. These issues are then compounded with fears, lack of control and helplessness, and self-defeating behaviors. She suggests that to achieve sobriety, these images and memories must be brought into conscious awareness, be reorganized and replaced with images of hope, strength, and self-confidence. She also writes that the music and imagery process is beneficial in the treatment process in that it allows clients to: view their life from various perspectives, develop a sense of inner trust, resolve internal conflicts, alter moods, develop self-awareness, experience a healthy model of coping, and create a sense of cohesion with the fragmented parts of one’s life. The GIM experience allows the individual to access and confront those parts of themselves that they have utilized the substance to avoid and repress [46].

Murphy explored the effects of group guided imagery and music on adults in substance abuse treatment. The study explored the impact of these group sessions on resiliency, depression, and motivation. Following eight group GIM sessions, subjects in the experimental group demonstrated a 65% decrease on the Beck Depression Inventory, while the control group demonstrated a 46% decrease. Additionally, the retention rate for the experimental group was 75% and only 50% for the control group. She suggests that this may indicate a relationship between participation in the group GIM experience and motivation for treatment. These early explorations, clinical case examples, and group GIM research suggest that further research is warranted with this clinical population [47].

Moe examined the impact of group guided imagery and music with adults in inpatient substance abuse treatment. This study examined the impact of group GIM sessions on subjects Sense of Coherence (SOC), patient appraisal of therapy, as well as interview questions regarding their therapy experience. Following ten 1.5 hour weekly group sessions, 18 of the 17 subjects demonstrated higher SOC scores. Responses to the Valbak Questionnaire indicate subjects valued the use of music in therapy, that they were able to manage any challenge regarding the complexity of the music, and that problems with communication were not evident in these sessions. Subjects reported finding the sessions calm, they were able to gain insights about maladaptive behaviors and felt the sessions were a nice complement to cognitive therapy. They indicated wanting an increased number of group music and imagery sessions as well as longer sessions. They were most impacted

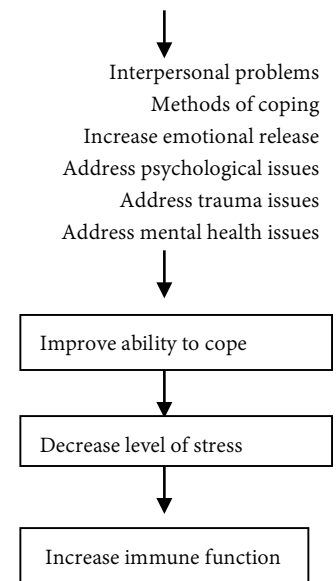
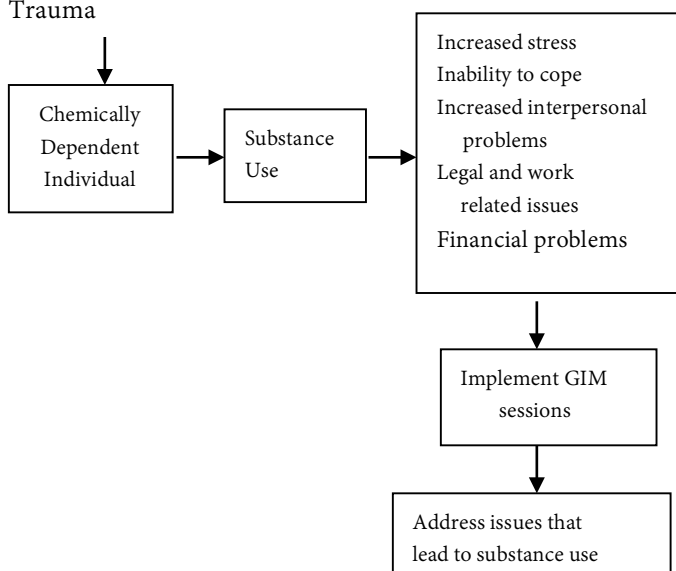
by specific and personal images that emerged, being able to give oneself to the music and being able to express strong feelings. Subjects reported benefitting most from being able to relax with music, experiencing the intensifying of both positive and negative emotions in the music, sharing these experiences in a group and expressing ‘here and now’ feelings [48].

The purpose of this study was to test the effectiveness of the Bonny Method of Guided Imagery and Music on the level of interpersonal problems, sense of coherence and salivary Immunoglobulin A of adults in chemical dependency treatment. Hypotheses included: (a) Subjects assigned to GIM sessions will report a decreased number of interpersonal relationship issues from the pretest to the posttest as measured by the Short Form of the Inventory of Interpersonal Problems Circumplex Scale [49] as compared to those who do not receive GIM; (b) Subjects assigned to GIM sessions will report an increase in manageability, comprehensibility and meaningfulness of their life from the pretest to the posttest as measured by the Orientation to Life Questionnaire (Sense of Coherence Scale) [50] as compared to those who do not receive GIM; (c) Subjects assigned to GIM sessions will experience an increase in immune function from the pretest to the posttest as demonstrated by an increase salivary Immunoglobulin A (sIgA) levels as compared to those who do not receive GIM.

**Figure 1**  
Conceptual Framework of GIM for Enhanced Psychological Well-being and Immune Function in Persons Undergoing Chemical Dependency Treatment

Influences

Unresolved psychological issues  
Mental health issues  
Poor coping skills  
Physical pain  
Trauma



METHOD

*Setting and Participants*

The setting for the study was a 25-bed adult inpatient substance abuse treatment program in a Mid-western major metropolitan care facility. The program was designed as a 60-day recovery program that utilized the Alcoholics Anonymous philosophy (AA). Following approval from the Institutional Review Board (IRB) at the University of Minnesota, participants for this study were drawn from a convenience sample (N=19). Power analysis calculations were not utilized to determine sample size for the study, due to the lack of experimental research testing GIM in the substance abuse treatment setting. The intended sample for the study was 30 subjects.

The randomized assignment of subjects to conditions resulted in 9 control, receiving usual care and 10 experimental subjects receiving individual, weekly GIM sessions in addition to the usual care in the course of their inpatient treatment. The control group received usual care in the treatment program, which was comprised of verbal group therapy, AA meetings and meeting with a social worker for follow up treatment and discharge planning. Participants were motivated to enter treatment for a variety of reasons, including: declining physical health, family concerns, physician recommendation, or court order (see Table 1).

**Table 1**  
**Subject Motivation to Enter Treatment**

	Experimental n=10	Control n=9	Total N=19
Declining physical health	7	8	15
Family concerns	4	4	8
Physician recommended	7	4	11
Court ordered	4	2	6

Participants were not compensated for their involvement in the study. Exclusion criteria included: (a) non-English speaking and (b) diagnosis for psychosis or psychotic state. No individuals met the exclusion criteria for this study. The control group included, 2 females and 7 males, and the experimental group included 2 females and 8 males. Participants ranged in age from 41 to 64 years old, with a mean age of 56 years.

*Design*

This study utilized a quasi-experimental design with pretest and posttest measures. The measures utilized tested the effect of GIM on interpersonal problems, sense of coherence and salivary immunoglobulin A. The between group variable had two levels, control and experimental conditions. Participants were randomly assigned to the control (n=9) or the experimental group (n=10). The independent variable included weekly GIM session. Dependent variables included: (a) ability to cope, (b) quality of interpersonal relationships, and (c) level of salivary Immunoglobulin A (sIgA). The experimental group received one GIM session each week for the duration of their time in treatment, for a maximum of 7 sessions.

The measures selected for use in this study were chosen based in the research literature surrounding substance use and abuse and how addiction is influenced by psychological issues including one’s ability to manage stressful life events, and find meaning in life and through these life events, and managing relationships in one’s life. Addiction not only influences psychological issues; it impacts physical health as well. Including psychological and physical measures, fostered an inclusive focus for this complex disorder, as well as builds upon the current GIM research that addressed psychological and physiological measures.

*Measures*

The within group variable included pretest and posttest measures of interpersonal problems, sense of coherence and salivary immunoglobulin A. Interpersonal problem variables were scores on eight different subscales. These subscales

include: domineering, vindictive, cold, socially avoidant, non-assertive, exploitable, overly nurturing, and intrusive. Sense of coherence variables include, scores from three subscales, these include: meaning, comprehensibility and manageability. Physiologic measures included measuring pre and post salivary immunoglobulin A levels. The measures were analyzed to evaluate statistically significant change between the pretest and posttest measures. Internal reliability for the Short Circumplex Form of the Inventory of Interpersonal Problems is .88 [49] and the Sense of Coherence Scale reliability according to Cronbach’s is alpha .88 to .93 [50].

*Procedures*

When patients were admitted into the treatment program the nurse manager asked if they were interested in meeting with the researcher in order to receive information about participating in the research study. Subjects that were interested in obtaining more information about study participation and were eligible to participate in the study were scheduled to meet individually with the researcher to review and sign the consent form. All research sessions occurred in a vacant patient room on the unit. Participants that signed the consent form were then randomly assigned to either the experimental or control group. All participants completed the Inventory of Interpersonal Problems (IIP-SC), the Sense of Coherence Scale (SOC), and provided the first saliva sample. For the saliva sample collection, subjects were asked to expectorate in a Nunc 1.8 ml cryotube. A line was clearly marked on each tube to indicate the amount of saliva required, which was 400uL (microliters), this ensured a large enough of a sample if a duplicate analysis was necessary. Following the collection of the saliva sample, each sample was processed, frozen and stored at the local University Medical Center Patient Laboratory until all the posttest samples were collected and deposited. After the completion of the pretest paper and pencil psychological measures, subjects were scheduled for the first Guided Imagery and Music (GIM) session.

*GIM Intervention*

The purpose of the intervention for this study was to begin to uncover and address the issues contributing to the individual’s method of coping, interpersonal problems, and addiction. Addressing these issues thus leads to changes in methods of coping, overall health and immune function. Subjects in the experimental group had one GIM session per week during the length of their treatment. The GIM sessions ranged in length from 1 ½ to 2 hours. The length of each session was dependent on the music program selected for that session. Table 2 illustrates the number of GIM sessions for each subject and the average length of these sessions.

**Table 2**  
**Length of GIM Sessions for the Experimental Group**

Subject	Number of GIM sessions	Average length of sessions (hours)
1	6	1.75
2	7	1.8
3	5	1.8
4	7	1.7
5	7	1.8
6	6	1.8
7	6	1.75
8	5	1.8
9	4	1.75
10	5	1.8

During the initial session, the researcher explained and described GIM as a method of self-exploration, which involves listening to specifically designed programs of sequenced classical music to allow images to be experienced. Additionally that in the process of imaging the imager describes these images with the guide and the guide dialogues with the imager throughout the process. Subjects were informed that the guide would be keeping a transcript, a written log of the images as the imagers described them. They were also informed that they would be given a copy of the transcript immediately following the session. The transcript was provided so the subjects could review the images from one session to another.

Subjects were informed of the variety of experiences possible and of the broad definition of images, which includes feelings, physical sensations, sensory-kinesthetic experiences, thoughts and memories. GIM was differentiated from relaxation sessions, which could also involve music and imagery. This was achieved by informing participants that although GIM is relaxing at times, it includes a broad range of experiences, some of which can be uncomfortable. They were told that the purpose of GIM is to experience the images to the extent that one is willing to allow change to occur within them. Subjects were then asked to identify two or three issues or problems that they recognize in their life and would like to address in the sessions.

The music utilized in the sessions was selected according to the individual’s needs. No formal assessment tool was utilized to select the music program. Selection of the music program was consistent with the method taught and utilized in the training of the Bonny Method of Guided Imagery and Music. The music programs were from the Music for the Imagination produced by Barcelona Publishers and utilized according to the guidelines of Bonny [51] and Bruscia [52].

The initial phase of each guided imagery and music session consisted of a brief assessment that was conducted by the researcher. No formalized tool was utilized for this assessment. The assessment was conducted according to the

technique taught in the training of the GIM. The researcher assessed the subject’s stress, anxiety and energy levels, asked the subject to identify any particular feelings they may be experiencing and if there were experiences and/or images from previous sessions they felt needed to be addressed.

During all of the guided imagery and music sessions, the subject spoke aloud, describing the imagery experience as it occurred and the guide responded and dialogued with the imagery throughout the music and imagery experience. The guide maintained a duplicate written transcript of each session. One copy was given to the subject and one retained by the guide. Following the imagery portion of each session the subject was provided an opportunity to discuss any reactions, feelings, thoughts, memories or experiences pertaining to the imagery experience or related therapy issues. This post sessions processing ranged in length from twenty to thirty minutes and occurred following each imagery experience. Following the final imagery session, the guide scheduled the posttest session with each subject in the experimental group.

*Posttest*

The posttest phase for both groups occurred one day prior to discharge, which was the last full day of treatment for each subject. Each subject met individually with the researcher for the posttest session. Subjects from both groups were again asked to complete the SOC, IIP-SC and provided a cryotube for their saliva sample.

**Results**

This study included 19 subjects who were admitted for inpatient chemical dependency treatment. 10 subjects were assigned to the experimental group and 9 in the control group. Table 3 provides an analysis of subject demographic data, including gender, age, ethnicity, drug of choice, years of use, previous treatments, and education level. The experimental group included 8 male subjects and 2 female subjects, while the control group included 7 male subjects and 2 female subjects.

**Table 3**

**Subject Demographic Information**

	Experimental	Control	Total
Number of subjects	10	9	
Gender			
Male	8 (80%)	8 (80%)	15 (78.9%)
Female	2 (20%)	2 (20%)	4 (21%)
Mean age (SD)	49.0 (7.3)	57.8 (7.1)	55.9 (7.2)
Ethnicity			
Caucasian	9 (90%)	8 (88.8%)	17 (89.5%)
African-American	1 (10%)	0	1 (5.3%)
Native American	0	1 (11.1%)	1 (5.3%)
Drug of choice			
Alcohol	9 (90%)	8 (88.8%)	17 (89.5%)
Cocaine	1 (10%)	1 (11.1%)	2 (10.5%)
Means years of use (SD)	21.1 (9.4)	20.4 (13.0)	20.8 (10.9)
Mean number of previous treatment episodes (SD)	5.7 (3.7)	4.0 (3.4)	4.9 (3.6)
Education level			
GED	1 (10%)	1 (11.1%)	2 (10.5%)
High school graduate	7 (70%)	5 (55.5%)	12 (63.5%)
Associate degree	1 (10%)	1 (11.1%)	2 (10.5%)
Bachelor's degree	0	1 (11.1%)	1 (5.3%)
Master's degree	0	1 (11.1%)	1 (5.3%)
Doctoral degree	1 (10%)	0	1 (5.3%)

Table 4 includes subject medical and physical diagnosed co-morbidities. Most subjects were diagnosed with multiple co-morbid disorders as is evident from wide range and number of diagnoses include in Table 4. In most of these diagnoses, substance use was the genesis or exacerbated the medical or physical condition.

**Table 4**

**Subject Co-morbidities**

	Experimental n=10	Control n=9	Total N=19
Liver damage/cirrhosis	2	3	5
Chronic pain/back pain	1	1	2
High blood pressure	2	1	3
Neuropathy	1	1	2
Problems with balance	2	1	3
Diabetes	2	0	2
COPD	0	1	1
Hearing loss	1	0	1
Arthritis	3	2	5
Memory loss	2	2	4
Traumatic brain injury	1	1	2
Stroke	1	1	2
Ulcers (bleeding)	2	1	3
Heart problems	2	2	4
Lupus	0	1	1
Heptatitis C	0	1	1
Poor kidney function	0	1	1
Vision loss/Blindness	0	1	1

**COPD = Chronic Obstructive Pulmonary Disease**

Table 5 includes additional mental health diagnoses. The range of length of treatment for each group was 25-60 days, with a mean of 40 days for the experimental group and 45 days for the control group and a total mean of 42.7 days. Length of treatment varied depending on the subject's insurance carrier and the number of days approved or whether treatment was court ordered. The number of GIM sessions ranged from 4 to 7 sessions with a mean of 5.8 (SD 1.0) sessions, a median of 6 sessions, as illustrated in Table 2. Their length of stay in treatment determined the number of sessions an individual received.

**Table 5**

**Subject Mental Health Diagnoses**

	Experimental n=10	Control n=9	Total N=19
Adjustment disorder	1	1	2
Generalized anxiety disorder	2	1	3
Depression	5	4	9
Personality disorder			
Anti-social	0	1	1
Borderline	1	0	1
Posttraumatic stress disorder	3	2	5
Intermittent explosive disorder	1	0	1

An independent t-test was utilized to compare the 2 groups at baseline. The data for the experimental and control groups did not demonstrate significant differences at baseline for the Inventory of Interpersonal Programs or the Sense of Coherence Scale. Analysis of Covariance was utilized to analyze posttest measures. The covariate being controlled was the baseline measure.

**Table 6**

**Mean Pretest Scores on the Inventory of Interpersonal Problems for Experimental and Control Group**

	Experimental Group n=10	Control Group n=9	t (df)	P-value
Subscale	Mean (SD)	Mean (SD)		
Domineering	4.2 (2.4)	4.2 (2.2)	-.02(17)	.98
Vindictive	4.2 (2.9)	4.9 (2.4)	-.55(17)	.59
Cold	7.0 (5.0)	7.1 (2.4)	-.06(17)	.95
Socially avoidant	6.1 (4.3)	6.7 (2.1)	-.36(17)	.73
Non-assertive	9.2 (3.3)	8.1 (3.2)	.73(17)	.48
Exploitable	7.0 (2.6)	8.6 (2.1)	-1.4(17)	.17
Overly nurturant	9.6 (2.5)	8.4 (2.1)	1.1(17)	.29
Intrusive	5.1 (3.1)	6.2 (3.6)	-.73(17)	.48

Comparisons on the pretest measures were completed utilizing an independent t-test. The data for experimental and control group subjects on the Sense of Coherence Scale did not demonstrate any significant differences at baseline on the comprehensibility or the manageability subscales, however, a significant difference was demonstrated on the meaningfulness subscale. The experimental group scored significantly higher on this subscale than the control group, P=.04. The Analysis of Covariance was utilized to control for this pretest difference. Table 7 illustrates the Sense of Coherence Scale pretest scores.

**Table 7**

**Mean Pretest Scores on the Sense of Coherence Scale for Experimental and Control Groups**

	Experimental Group n=10	Control Group n=9	t(df)	p-value
Subscale	Mean (SD)	Mean (SD)		
Meaningfulness	39.0 (7.3)	32.4 (5.0)	2.3 (17)	.04
Comprehensibility	34.1 (8.8)	34.1 (3.4)	-.004 (17)	.99
Manageability	44.3 (8.3)	42.9 (4.8)	.45 (17)	.86

Table 8 illustrates the means and standard deviations of the posttest scores of the experimental and control groups on the eight subscales of the Inventory of Interpersonal Problems Short Circumplex Form. Overall, the control group decreased on two of the subscales and increased on the remaining six subscales. The overall comparison between the two groups produced significant change on three of the eight subscales including, domineering, cold and non-assertive.

**Table 8**

**Mean Posttest Scores on the Inventory of Interpersonal Problems for Experimental and Control Groups**

	Experimental Group n=10	Control Group n=9	ANCOVA(df)	p-value
Subscale	Mean (SD)	Mean (SD)		
Domineering	3.0 (1.2)	4.9 (2.6)	5.2(1,16)	.04*
Vindictive	3.4 (2.1)	5.7 (2.9)	3.8(1,16)	.07
Cold	5.5 (4.4)	8.4 (2.8)	8.1(1,16)	.01*
Socially avoidant	4.2 (3.7)	6.4 (3.0)	4.1(1,16)	.06
Non-assertive	6.4 (3.8)	9.3 (4.0)	4.6(1,16)	.048*
Exploitable	6.2 (3.9)	7.9 (2.6)	.003(1,16)	0.96
Overly nurturant	6.6 (3.1)	8.8 (1.9)	3.3(1,16)	.09
Intrusive	4.5 (2.3)	6.6 (3.4)	1.8(1,16)	.20

\* = p<0.05

The experimental group did demonstrate significant change on the manageability subscale, as shown in Table 9. The pretest scores of the experimental group were significantly higher than the control group on the meaningfulness subscale. The control group did demonstrate significant change on the meaningfulness subscale. Analysis of Covariance was utilized to control for the baseline differences between the experimental and control groups. In comparing the overall change on the meaningfulness and comprehensibility subscales, no significant change was found for the experimental or control group. The overall score change on the comprehensibility subscale for the experimental group was an increase of 6.2 and an increase of 2.9 for the control group.

**Table 9**

**Mean Posttest Scores on the Sense of Coherence Scale for Experimental and Control Groups**

Experimental Group	Control Group		
n=10	n=9		
Mean (SD)	Mean (SD)	ANCOVA(df)	p-value
42.2 (4.1)	35.6 (5.6)	3.1(1,16)	.1
40.3 (5.1)	37.0 (5.8)	1.6(1,16)	.22
49.3 (7.5)	41.8 (5.4)	7.8(1,16,)	.01*

\* = p<0.05

The data for experimental and control groups on the salivary IgA levels did not demonstrate significant differences at baseline, utilizing an independent t-test. The Analysis of Covariance was utilized to analyze the posttest data, controlling for baseline IgA measures. Table 10 illustrates the pretest and posttest levels of salivary IgA for the experimental and control subjects. This table also includes the level of change from the pretest level to the posttest level for both groups. All of the subjects in the experimental group did demonstrate an increase in sIgA, although this was not statistically significant it does demonstrate a data trend. Seven of the subjects in the control group demonstrated an increase in sIgA, however three of the subjects demonstrated a decrease.

**Table 10**

**Salivary Immunoglobulin A Data for Experimental and Control Groups**

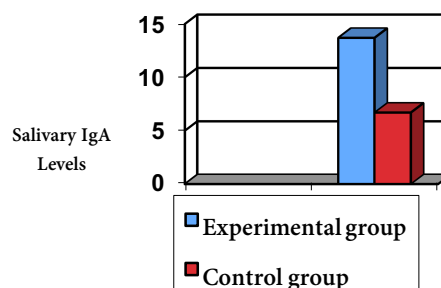
Subject	Pretest Score	Posttest Score	Level of Change
E1	8	26	18
E2	8	15	7
E3	10	26	16
E4	23	39	16
E5	10	26	16
E6	3	8	5
E7	3	8	5
E8	8	31	23
E9	6	34	28
E10	1	4	3
C1	18	31	13
C2	10	14	4
C3	4	13	9
C4	7	34	17
C5	12	10	-2
C6	14	8	-6
C7	9	24	15
C8	8	5	-3
C9	7	10	7

E = Experimental group (n=10)  
C = Control group (n=9)

The overall group change in sIgA levels in the experimental and control groups is illustrated in Figure 2. The overall change for the experimental group was +13.7 and the overall change for the control group was +6.7. Despite the difference change within the experimental group, when the two groups were compared the change was not significant,  $F(1,16) = 2.7, p = 0.12$ . Although the change was not significant, it does demonstrate a positive trend.

**Figure 2**

**Overall Change in Salivary IgA by Study Groups**



## Discussion

The aim of this study was to test the effectiveness of the GIM on the level of interpersonal problems, sense of coherence and salivary immunoglobulin A of adults in chemical dependency treatment. This was based on the conceptual framework (Figure 1) that explores how addressing and uncovering the unresolved feelings or issues underlying the addiction decrease the severity and number of interpersonal problems, increase sense of coherence and in turn improve immune function.

It is important to recognize that all study subjects were engaged in treatment throughout the course of the study. Therefore, it is reasonable to expect that subjects would demonstrate improvement on measures as all subjects received the usual care. The experimental subjects received weekly GIM sessions in addition to the usual care and thus demonstrated greater overall improvement in several areas.

An important finding of this study is the significant change on 3 of the 8 subscales on the Inventory of Interpersonal Problems Short Circumplex (IIP-SC), including domineering, non-assertive, and cold subscales. Additionally, the vindictive, socially avoidant, and overly nurturant subscales demonstrated a positive trend toward reaching significance. The 2 remaining subscales, intrusive and exploitable demonstrated overall lower scores in the experimental group, which also demonstrates a positive trend. It is important to note that on the IIP-SC, overall the experimental group demonstrated decreases on all 8 scales, while the control group only demonstrated a decrease on one subscale and actually showed increases on the 7 remaining subscales. The significant change on the 3 subscales and the positive trend of change on the remaining 5 subscales provide support for the GIM in addictions treatment and of the conceptual framework.

The results of the Sense of Coherence Scale (SOC) demonstrate a significant overall change on the manageability subscale. While the results on the meaningfulness and comprehensibility subscales were not significant, there is a positive trend toward overall change in the experimental group compared to the control group. The results demonstrate that the GIM are instrumental in helping subjects feel better able to manage their lives and there is a trend toward being able to find meaning and understanding in their lives, as is evident in the changes in scores on the remaining two subscales.

The data on salivary IgA levels did not demonstrate significant overall change in this study. What is evident is that all the subjects in the experimental group did demonstrate an increase in sIgA, and although this is not statistically significant, it does demonstrate a data trend. Seven of the subjects in the control group demonstrated an increase in sIgA, however three subjects demonstrated a decrease. The

overall change for the experimental group was +13.7 and the overall change for the control group was +6.7.

This significance of the results and data trends is further enhanced by the fact that the subjects in this study were in an inpatient treatment program, had a mean of 21 years of substance use and an average 6 previous treatment episodes. This demonstrates a chronic chemical dependency history with repeated relapse. Additionally, the subjects demonstrated a myriad of co-morbid medical and mental health diagnoses. Given chronic nature of the chemical addiction, the complexity of their medical and mental health status, these changes were achieved after an average of six GIM sessions. These overall changes support the use of the GIM in chemical dependency treatment.

There are several limitations associated with this study. No power analysis was utilized to determine a sample size for this study. Due to the lack of experimental research incorporating GIM in this population, no previous information was available. The sample size was decreased due to the restructuring of the inpatient program during the course of the research study. Recruitment and the study had to be terminated after a year as the program shifted from an inpatient treatment program to providing services on an outpatient basis only. Due to these changes the investigator was unable to achieve the intended sample size for enrollment in this study. The small sample size may have been a contributing factor to the baseline data not being distributed normally. This small sample size may have also contributed to the lack of significance on various subscales of the Inventory of Interpersonal Problems and the Sense of Coherence Scale.

Given the small sample size, few minority subjects were recruited. Every effort was made to recruit minority subjects into the sample. Although, given the ethnic diversity of this Midwestern metropolitan area, this finding is not surprising. However, due to the small number of minority subjects enrolled in the study, results are limited in their ability to generalize to more diverse populations and settings.

Another study limitation was the length of stay for the current treatment episode for subjects. Due to variance in insurance coverage, subjects were in treatment for varying lengths of time. In some cases, insurance reviews were conducted on a weekly basis to determine if the individual would remain in treatment another week. Therefore, at the onset of treatment for some individuals, their length treatment was unknown. For those court ordered to treatment their treatment stay was predetermined at a prior court hearing. It is unknown what possible effects knowing or not knowing one's length of stay in treatment may have had on subjects.

This variation in length of stay and unknown length of stay at times hindered the investigator's ability to incorporate a mid-point measure in treatment. Therefore, only pretest and posttest measures were utilized. This limited the amount of data to be collected on each subject. A measure was not implemented to account for any changes in health status or

effects of medication during the course of treatment. Additionally, only one measure of immune function was utilized for this study and this was not a measure that is more widely used.

An additional limitation included that the researcher also was a facilitator of the GIM sessions. Due to the fact that the researcher was the only individual trained in this method in the state at the time, this limitation was unavoidable. It is not known what affect the client-therapist relationship may have had on the subjects and how this influenced their therapeutic process. Many studies indicate that effectiveness of therapy is related to the client – therapist relationship [53, 54, 55, 56].

Persons that are chemically dependent face numerous challenges and additionally must cope with the negative impact substance use takes on one's health. Failure to address the psychological issues an individual may present in treatment leaves them ill equipped to manage and cope upon discharge from treatment. Findings from this study indicate that for this sample of chemically dependent individuals, a series of GIM sessions can decrease the level of interpersonal problems and increase Sense of Coherence or one's ability to cope. Additionally, in assisting an individual in confronting these issues and working through them, they develop a sense of competence. This in turn demonstrated a positive change on salivary IgA in a small sample.

The series of GIM sessions provided the opportunity for subjects to address issues of unresolved grief and loss, confront traumatic war experiences, identify issues of loneliness and isolation, release repressed anger, confront issues of abuse and address issues of childhood abandonment. It is felt by this investigator that 3 issues addressed in the GIM process contributed to each individual's substance use. Furthermore, addressing these issues significantly impacts one's success for recovery.

The results from this study indicate that a series of weekly GIM sessions can assist in decreasing interpersonal problems, increase Sense of Coherence and increase salivary IgA. It is not known at the onset of therapy how many sessions an individual may require, in order to demonstrate improvement. The number of sessions needed before a change is evident in these measures would likely vary from one person to the next. Therefore, further research should incorporate more frequent measures throughout the series of sessions. This could allow for further examination into if a particular length of stay is more beneficial and has a greater impact on these measures. Additionally, measures should account for overall health status changes during the course of treatment and incorporate multiple immune function measures, including salivary cortisol.

Since length of treatment stay is often no longer a predetermined issue it is unlikely to have a study in an inpatient setting where all the subjects are in treatment the same number of days. It may be more feasible to achieve this in another level of treatment, possibly a day treatment or

outpatient program. Increasing the sample size could also help to manage this issue of variability in length of stay.

This is the first research study incorporating GIM with individuals in chemical dependency treatment. To further validate the results from this study, it would be beneficial to have another investigator replicate these findings to ensure that GIM is an effective intervention for addressing interpersonal problems, Sense of Coherence and increasing salivary IgA for individuals in chemical dependency treatment. Additionally, it would be valuable to explore the role the client – therapist relationship plays in the process of therapeutic change. Adding a measure to address this variable in a study would provide increased insight into the impact this relationship may have in the treatment process.

Based on the findings from this study, GIM sessions can be an effective intervention to address interpersonal problems, improve an individual's ability to cope and increase salivary IgA in patients in chemical dependency treatment. The investigator believes that GIM sessions can be beneficial in promoting positive therapeutic outcomes for individuals in chemical dependency treatment. Although not all the data demonstrated statistical significance, the experimental group demonstrated positive changes on all measures. This information warrants further investigation into this type of research. This is significant in the fact that the number of sessions for the experimental group ranged from 4 to 7 sessions. Given the brief number of sessions, improvement on all measures was observed. This is also impacted by the fact that many of the subjects had been through treatment before on multiple occasions and had been addicted to the substance for many years. By all accounts, these were chronic patients. This rather brief period of GIM sessions/therapy provides a case for GIM to be a viable brief therapeutic approach.

Future research is warranted to further explore dose and effect of GIM in addictions treatment. This study did not include a follow up with subjects after their discharge from treatment. This would be an important area of research due to the complexity and chronic nature of addiction as well as high relapse rates and recidivism. Further exploration of these aspects and the impact of GIM in addictions treatment would provide valuable insight into ways that GIM may be beneficial for patients undergoing addictions treatment. Additionally, it is not clear from this study what impact the AA philosophy may have played in the study outcomes. This would be another area for future research as well.

In summary, an addiction to a substance can be a debilitating problem. It can emotionally cripple an individual to the point that they cannot find a way out. They feel ill equipped to cope with their life so they turn to the substance. When this pattern continues for years on end it can feel as if there is no hope. Often when it has continued for years, loved ones may also have lost hope or even given up and walked away [3, 57]. The GIM sessions provided an aspect to treatment they had not tried before, allowing them to gain a new perspective. GIM

should be encouraged and offered for individual's in chemical dependency treatment to promote improved coping, recovery and positive physical health outcomes.

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