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Where Do Delusions Come From? A Study of Life Positions and Cognitive-Affective Factors as Determinants of Delusions

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ABSTRACT

Delusions are pervasive faulty beliefs which are reported to have significant consequences for psycho-social functioning of the inflicted and appear to emerge not only as a psychotic symptom in psychiatric population but may occur in general population also. Considering its prevalence in different groups of people, detailed understanding of the causes of delusions would be relevant. The present study was, therefore, designed to explore the determinants of delusional beliefs. Specifically, the study addressed the possible contributions of life positions, cognitive insight, and social injury in the development of delusions. The sample comprised of two groups: 31 deluded and 29 non-deluded individuals. Results of Predictive Discriminant Analysis indicated that the proposed model significantly discriminated between deluded and non-deluded conditions. Further analysis showed that the life position "I am not Ok, You are not Ok" and perceived social injury significantly predicted delusional beliefs. However, contrary to expectation, non-significant contribution was observed for the predictor, cognitive insight and its sub-dimensions. It is believed that the results of the present study provides insight into the complex phenomenon of delusions from different perspectives and may assist in counseling process.

KEYWORDS: Delusions, Life Positions, Social Injury, Cognitive Insight

1. INTRODUCTION.

Delusions are usually investigated in connection with hallucinations and are typically considered as a symptom of psychotic conditions such as schizophrenia and mood disorders. In fact, delusions also appear independently qualifying for a diagnosis of delusional disorders or paranoid personality disorder; tend to coexist with neurotic disorders (Tibbo, Swainson, Chue, & Le Melledo, 2002) [1] and may emerge because of neurological dysfunctions (Kiran& Chaudhary, 2009) [2]. According to an estimate, 1-3% of the general population suffers from severe delusional beliefs eligible for a clinical diagnosis (Freeman, 2006) [3]. Research also suggests that persistent delusions markedly affect the global functioning (Jorgensen & Jensen, 1994) [4], day-to-day functioning (McKay, Langdon &Coltheart, 2005) [5], psychological well-being (Freeman, et al, 2013) [6], and emotional and social experiences of the person (Moritz &Quaquebeke, 2013) [7]. In addition, it has also been found that delusional beliefs may sometimes result in violent behaviors (Moritz &Quaquebeke, 2013) and suicidal acts (Jorgensen & Jensen, 1994).
Considering the prevalence of delusions in psychiatric as well as general population and associated behavioral strains, as noted above, it appears that much more studies need to be conducted on *delusions* to fully capture the underpinnings of this intriguing yet complex variable.

2. **Conceptualization and Measurement Issues of Delusions**. Generally**,** delusions are viewed as faulty beliefs, which are held with unquestionable conviction and impossible content. However, this simplified definition has received much speculation. On one hand, neurobiological approach stresses upon physiological basis of all psychotic and neurotic conditions. Spitzer (1995) [8] used neurocomputational model to show that increased dopaminergic neurotransmission resulted in delusion-like features. Another study has observed delusional beliefs among patients with injury to frontal lobe and right hemisphere

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(Devinsky, 2009) [9]. The study proposed that when right hemisphere is damaged, the person loses the ability to assess any perception against reality, left hemisphere over-compensates by creating new realities.

On the other hand, phenomenological approach emphasizes on the subjective experience of the deluded. Most influential in this approach, has been the work of Karl Jasper (1963) [10]. Jasper endorsed the prevalent notion that all experience consists of incoming sensation (*content*) and organizing concept (*form*). However, he went on to propose that it is the differing *forms* of experience, that is how we interpret the content not the *content* itself which is responsible for causing psychopathology. Emphasizing upon the phenomenological nature of delusions, he distinguished between primary and secondary delusions. He classified primary delusions as *autochthonous beliefs,* emerging without apparent stimulation, un-understandable and incorrigible, while secondary delusions or delusion-like beliefs arose because of the person's present situation or mental state.

Jaspers' description of delusions is considered monumental because it allowed psychologists to develop a multidimensional model of delusions based on mental processes (see, for instance, Cutting, 1997 [11]; Kendler et al, 1983 [12]; Sims, 2003 [13]). A variety of scales are available for the measurement of delusions which view delusions as *form* rather than *content*. For example, PANSS (Kay, Fiazbein, &Opler, 1987) [14], BABS (Eisen, 2001) [15] etc. However, Peter's et al Delusions Inventory (PDI; Peter, 2004) [16] has received much popularity as PDI-21 is a three-dimensional scale which can be used for psychiatric as well non-psychiatric population.

3. Explanatory Models of Delusions. Several theoretical models have attempted to explain the propensity for delusional beliefs. For extensive reviews see the articles of McKay, Langdon, and Coltheart (2005) [17] and Kiran and Chaudhary (2009). Mckay and his colleagues (2005) [18] have segregated the existing theories in two bro ad categories. On one hand is the traditional *"motivational approach"* and on the other hand is the *"cognitive approach."* According to their analysis, motivational approach views delusion as coping mechanisms in the face of traumatic experiences and unsatisfied desires, while cognitive approach emphasizes upon pathological cognitive processes. They have proposed that perhaps a unified model is required to fully understand the development of faulty delusional beliefs.

4. The Present Study. The present study was designed to explain the development of delusions on the basis of theoretical framework of life positions, social injury, and cognitive insight. The present study argues that delusions emerge because the deluded person holds the position "I am not OK and/or You are not Ok." That is, the deluded individuals believe that they are worthless, inferior, their behavior is faulty and they don't deserve much, resulting in habitual faulty perceptual styles, which are compensated with delusions of reference, persecution, grandeur etc. The present study also proposed that this life position among deluded individuals originate from impaired cognitive insight, pervasive hurt feelings and the belief that the others have treated them unfairly.

4.1 Delusions and Life Positions. Transactional Analysis (TA) is a comprehensive personality model which attempts to explain individual differences on the basis of evaluative beliefs about oneself and others acquired early in life (Berne, 1966 [19]; Harris, 1969 [20]; Solomon, 2003 [21]). The theory proposes several assumptions and coins new terminologies to explain personality development. One of the basic assumption of the theory states that individuals make decisions about their own and others worth based on the messages that they receive from their caregivers. These decisions become *LifeScripts,* which are 'unconscious life plans' (Solomon, 2003) that help us to exhibit pervasive evaluative beliefs. These life scripts can be categorized into four distinct life (existential) positions: I am Ok/You are Ok (I+,U+), I am not Ok/You are Ok (I-,U+), I am Ok/You are not Ok (I+,U-), and I am not Ok/You are not Ok (I-,U-).

In order to verify these assertions, Boholst et al (2005) [22] studied association between the four life positions and attachment styles (Bartholomew & Horowitz, 1991) [23]. As anticipated, positive correlation was noted between I+, Others+ life position and secure attachment; I+, Others- life position and rejecting attachment; and I-, Others- life position and avoidant attachment. However, no association was observed between I-, Others+ with preoccupied attachment as hypothesized.

The TA theory further asserts that these existential positions are formed as firm convictions and have associated personality characteristics. For instance, Ernst and Franklin (1971) [24] have offered that individuals with I+,U+ position are accepting of oneself and others, are creative, spontaneous, and capable

of healthy relationships, individuals with I-,U+ believe that they are worthless, suffer from feelings of shame, depression and self-hatred, while individuals with I+,U- are accepting of themselves but view others as not trustworthy. Ernst added that such individuals are arrogant, contemptuous, depreciating and may have tendency for paranoia. Lastly, Ernst proposed that individuals who have a negative attitude towards oneself and others occupy a position of I-,Others-, predisposing them for psychotic characteristics.

This theorization implies that the life positions can be used to differentiate psychiatric population from non-psychiatric population. In order to test this hypothesis, Budisa and colleagues (2012) [25] investigated the four life positions among 100 non-clinical population and 100 depressives and paranoids. It was found that people suffering from psychopathology significantly scored highest on the position, "I am not OK," whereas depressives had pronounced "I am not Ok, You are not Ok" position. Earlier, Lester (1991) [26] had also reported that depressives tended to score high on I-,Others- life position.

In the light of the above discussion, the first research question of the study is presented as below.

Research Question No. 1:Do life positions predict delusions?

4.2 Delusions and Cognitive Insight. Impaired cognitive insight, defined as the inability to reflect on the abnormal interpretation of the reality and the tendency to incorrigibly believe in the erroneous inferences, is viewed as an important indicator of psychosis (Beck, Baruch, Balter, Steer, & Warman, 2004 [27]; Kraepelin, 1919 [28]) and in treatment methodology (Amador & David, 1998) [29]. It has been argued that the problem with psychotic patients lie not only in their ability to draw aberrant conclusions about variety of experiences but also the tendency to not to evaluate the inference and correct it. According to Aaron Beck et al (1979 [30]; 1985 [31]), the tendency to distort the reality is present in non-psychotic individuals also, but they are amenable to change it. Beck et al (2004), further, argued that this impaired cognitive insight may also be related with lack of awareness of presence of symptoms and mental illness. Thus, such patients may agree that their symptoms are signs of mental illness (intellectual insight) but "*they may not experience any appreciable change in their underlying delusional belief system* (emotional insight) (Beck et al, 2004).

Beck and his colleagues (2004) compared the level of cognitive insight across four groups of clinical disorders: schizophrenia, schizoaffective disorder, major depression with psychotic features and major depression without psychotic features. The results of the study yielded significant differences between the groups on cognitive insight. Further analysis showed that the mean value for major depression without psychotic trends on cognitive insight was highest among other groups. They also found that the tendency to self-reflect on aberrant interpretations was lowest among schizophrenics and while the capacity to resist corrective information from others was observed lowest among individuals of major depression with psychotic features.

This relationship between cognitive insight and psychosis has direct bearings for the formation and maintenance of delusional beliefs. As noted by Beck et al (2004), "*the aberrant beliefs [of deluded] are sufficiently intense to override the normal processes of reality testing which are already attenuated in psychosis."* Warman and Martin (2005) [32] investigated the relationship of cognitive insight with delusion proneness among 200 undergraduates without any history of psychotic conditions. Their results indicated that participants who reported more delusion proneness showed more certainty in their beliefs and evaluations; however, contrary to Beck's proposition, individuals with high delusion proneness were also open and accepting for external feedback.

In another study, Engh, Friis, and Andreassen (2010) [33] conducted a cross-sectional study to explore association of delusions and hallucinations with cognitive insight. Their results yielded a significant correlation between delusions and low self-reflectiveness and delusions and high certainty about ones beliefs. Generally, the findings suggested that delusions are associated with low cognitive insight while a positive correlation was found between solitary hallucinations and cognitive insight.

Based on the above-mentioned studies, following research question was explored as another objective of present study.

Research Question No. 2:Does cognitive insight predict delusions?

4.3 Delusions and Social Injury. The term social injury is interchangeably used with psychological/ emotional pain and hurt feelings (Meerwijk& Weiss,2011) [34]. Essentially, the concept refers to painful

feelings that emerge when a person experiences social exclusion or rejection. Another related concept is *emotional wounds*. According to Schurmann (2009) [35], "An emotional wound is the result of an emotional injury (inflicted by people or events) that has not yet healed." Research suggests that all these concepts have important implications for psychological and emotional health of individuals. For instance, it has been found that people with perceived social injury or hurt feelings react with amplified aggressive behavior (e.g., Buckley et al., 2004 [36]; Muhammad &Rasool, 2014) [37]and reduced prosocial behavior (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007) [38]. In some cases association between emotional pain and depression and suicidal ideation (Mee, Bunney, Reist, Potkin, Bunney, 2006) [39] has also been observed.

Several studies have pointed to the fact that social hurts or emotional pains are experienced just like a physical pain. Eisenberger, Lieberman, and Williams' (2003) [40] studied stimulation of various brain regions of individuals who were made to believe that they were socially rejected. They found that during this experience dorsal anterior cingulate cortex (ACC) and right ventral pre-frontal cortex (PFC) were activated; regions associated with the experience of pain (e.g., Rainville, Duncan, Price, Carrier, & Bushnell, 1999) [41]. In another study, DeWall, MacDonald, Webster, Tice, and Baumeister (2007) [42] argued that if emotional hurt and physical pain had overlapping processing mechanisms, analgesics should also lessen emotional pain. As proposed, the experimental group reported significantly lower hurt feelings than placebo group.

These studies point towards the debilitating consequences of social and emotional hurts. In order to understand this interpersonal phenomenon, Geoff McDonald (2009) [43] reviewed the possible determinants of hurt feelings. He has proposed that feelings of rejection and loss of positive social rewards may lead to hurt feelings. MacDonald and Leary (2005a) [44] have argued that "pain affect evolved to become associated with social exclusion because belonging is crucial for survival and reproduction among social animals……and hurt feelings are clearly associated with feelings of rejection (Leary et al., 1998) [45] . In relevance to this argument, Buckley, Winkel, and Leary (2004) [46] found that participants reported rejecting messages as more hurting than neutral ones.

The above theoretical and empirical findings were used as the foundation for the third research question of the present study.

Research Question No. 3: Does social injury predict delusions?

5. Method. Detail of the method is provided below.

5.1 Participants. The participants of the study consisted of total 60 participants, among which 31 were suffering from delusions of some type and 29 were non-deluded. Among the total, 25% of the participants were female and 75% were male. Crosstabulation results showed that 33.33% participants were graduates of Grade 10, 15% Grade 12, 40% had Bachelors and almost 12% had Masters degree. The income of approximately 60% participants was $100 per month, while the income of remaining 40% ranged from more than $ 100 to $1000.

5.2 Instruments. Following scales were used to obtain data on the study variables.

5.21 Peters et al Delusion Inventory (PDI; 2004). In order to measure delusional beliefs among clinical and non-clinical population, Peters et al Delusion Inventory (PDI; 2004) was used. The scale contains 21 questions anchored on yes/no options. If the respondent selects "yes" option, he/she is required to further rate the same question on three dimensions of delusions including preoccupation, distress, and conviction on a 5-point Likert Scale. The responses are summed across all questions, which may range from 0-336. Peters et al (2004) has reported high internal consistency and test-retest reliability and construct validity of the scale.

5.22 Life Positions Scale (2002). Life positions of the participants were measured through 20-item Life Positions Scale developed by Boholst (2002). The scale, based on theory of Transactional Analysis given by Eric Berne and Thomas Harris, assesses four combinations of attitudes towards oneself and others: I+ Others+ (I am Ok, You are Ok), I- Others+, (I am Not Ok, You are Ok), I+ Others- (I am Ok, You are Not Ok), and I- Others- (I am Not Ok, You are Not Ok). All items are placed on a 5-point scale. Various studies

have shown The Life Positions Scale to be an internally consistent and valid measure (Budisa, Jerkovi, Dickov, Mitrovic & Dragin, 2012).

5.23 Emotional Wounds Assessment Tool (2009). Developed by John Schurmann (2009) to measure the construct of social injuries and emotional pain, Emotional Wounds Assessment Tool comprises of 30 items. The respondents are required to encircle the statement with which they agree. Each selected statement receives a score of "1" while the rest a score of "0." In this way the scores can range from 0 to 30.

5.24 Beck Cognitive Insight Scale (BCIS; 2004). This scale was constructed by Aaron Beck and colleagues (2004) to measure the awareness of clinical population about their mental illness. The scale contains 15 items with 4-point response options. The Beck Cognitive Insight Scale (BCIS) is a two-dimensional tool: 9 items measure 'self-reflectiveness' that is the tendency to introspect and acknowledge probability of misinterpretation, whereas, 6 items labeled as 'self-certainty' scale one's conviction about one's beliefs. The scale also calculates a composite index by subtracting sum of items of 'self-certainty' from sum of items of 'self-reflectiveness.' The composite index measures the willingness to self-reflect not affected by incorrigible conviction to be correct. The BCIS has demonstrated adequate reliability and validity (Beck et al, 2004).

5.25 Demographic Information Sheet. The Demographic Information Sheet was constructed to gather following information about participants of the study: age, gender, education, and income.

5.3 Procedure. The present study was carried out in three phases. In the first phase,all measurement tools of the study variables were translated into Urdu-language using forward-translation procedure. In the second phase of the study, Peters et al Delusion Inventory (PDI; 2004) was administered on clinical and general population to select 30 participants for each group. Mean cut-off value was used to identify an individual as deluded or not deluded. Later, the participants were approached individually and the rest of the measuring instruments were administered on them.

5.31 Data Analysis. Discriminative Analysis is a parametric technique, which is used to discriminate between groups of dependent variable on the basis of linear combination of independent variables (Ramayah, Ahmad, Halim, Zainal, & Lo, 2010) [47]. This technique is preferred when the dependent variable is categorical and predictor variable(s) is(are) continuous. The major purpose of the present study was to develop a predictive model which can separate deluded individuals from non-deluded individuals, therefore, Predictive Discriminant Analysis was applied on the data. In the first step, scores on PDI-21(Peter et al, 2004) for deluded individuals and non-deluded were recoded into dummy variables (Bian, 2014). The METHOD=Direct was used to enter all independent variables simultaneously. This method is recommended over stepwise discriminant analysis, as, pointed out by Pyryt (2004) [48], "*stepwise approach capitalizes on chance due to multiple statistical tests used to determine the order of entry.*" Moreover, direct approach is also preferred when the order of the predictors is not specified a priori (Pyryt, 2004).

6. Results. As the first step in the analysis, *t*-test was applied on the inventory of delusions for deluded and non-deluded participants to verify the selection of non-deluded and deluded participants in their respective groups (Table 1). Table 1 show significant mean differences between non-deluded and deluded individuals on the PDI-21 (Peter's et al, 2004). Results indicate that both groups significantly differ from each other.

Table 1: ***Means, Standard Deviations, and t-Values for Non-Deluded and Deluded on Peter's et al Delusions Inventory (PDI) (N = 60)***

	Non-Deluded		Deluded		t-value
	M	***SD***	***M***	***SD***	
PDI	52	24	128	33	-10.11***

***$p = .000$

In order to measure the contribution of independent variables in the dependent variable, Predictive Discriminant Analysis was applied on the data. The results are presented in the manner proposed by Ramayah and colleagues (2010).

Analysis presented in Table 2 show the summary of the interpretive measures for Discriminant Analysis. Canonical Correlation of 0.469 indicate that the proposed linear model explains approximately 22% variance in the dependent variable. Standardized Discriminant Coefficients in Table 1 present the relative importance of the independent variables. According to the figures , I-, Others- is the most important discriminatory predictor, followed by self-certainty and social injury. These results were confirmed by F-values (Table 2).

Analysis of Structure Coefficient values generated for the independent values revealed that I-,Others-, I+,Others-, I-, Others+ and social injury correlated significantly with the discriminant function, as the values of these variables were above .300 Table 2). These results mean that individuals who believe that they are not worthwhile and/or others are not worthwhile and have experienced emotional hurts are more likely to develop delusional beliefs.

Table 2: Summary of Interpretive Measures for Discriminant Analysis

Predictors	Standardized Discriminant Function Coefficient	Structure Coefficient	Univariate F ratio
I-/Others-	1.38	.818	10.938***
I+/Others-	-.492	.329	1.774
I-/Others+	.332	.391	2.501
I+/Others+	-.340	-.078	.100
Social Injury	.012	.440	3.160*
Self-reflectiveness	-.194	-.151	.375
Self-certainty	.373	-078	.101
Cognitve Insight	*not calculated*	-.095	.147
Canonical Correlation	.469		
Group Centroid Low	.540		
Group Centroid High	-.505		
Wilks' Lambda	.780		
χ^2	13.66 (df = 6), p< .034		

*** p = .000, * p < .05

Table 2 also shows the values of centroids for both groups. The mean discriminant score for the non-deluded individuals was found to be .540 and for deluded individuals, the mean discriminant score was found to be -.505. Figure 1 and Figure 2 show histograms for both groups. The difference between the groups is significant with χ^2 (df = 6) = 13.66, p< .034.

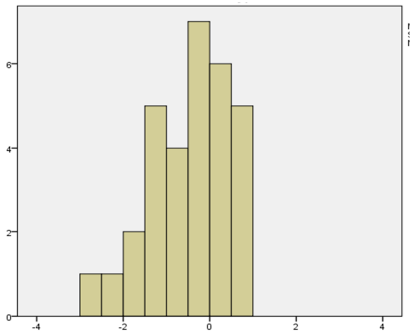

Figure 1: Histogram of Predictors for Deluded Group

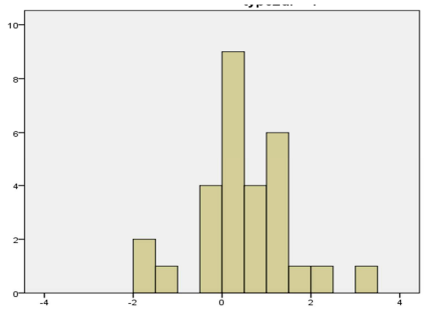

Figure 2: Histogram of Predictors for Non-Deluded Group

Table 3 reproduces the classification results for non-deluded and deluded. The analysis indicated that 65% of the deluded and 72% of non-deluded were correctly classified.

Table 3:
Classification Results

	Groups	No. of Cases	Predicted Group Membership	
			Low	High
Original	**Non-Deluded**	29	72.4% (21)	27.6% (8)
	Deluded	30	35.5%(11)	64.5% (20)
Cross Validation	**Non-Deluded**	30	51.7% (15)	48.3% (14)
	Deluded	30	38.7 (12)	61.3% (19)

The technique of Predictive Discriminant Analysis also yields correlation coefficients between the independent variables. Some of the remarkable coefficients are discussed below.
As shown in Table 4, as expected, I-,Other- is moderately related with I+,Other-; I-,Others+, and social injury. However, contrary to expectations, small but positive correlation was observed between I-,Others- and self-reflectiveness and cognitive insight and small but negative with self-certainty. This may be taken up to mean that individuals who believe that they and others are not worthwhile are not sure about the beliefs they hold. Interestingly, I+,Others+ appears to have small but positive correlation with self-certainty, reflecting that people who believe that they and others are worthwhile hold beliefs which they do not want to revise (Table 4).

Table 4: ***Correlation Coefficients between Predictors (N = 60)***

Variables	1	2	3	4	5	6	7	8
I-/Others-	-	.745	.657	.354	.516	.023	-.211	.135
I+/Others-		-	.543	.683	.417	.025	.063	-.011
I-/Others+			-	.802	.314	.050	.078	.004
I+/Others+				-	.187	.048	.308	-.123
Social Injury					-	-.155	-.124	-.074
Self-reflectiveness						-	.112	.845
Self-certainty							-	-.437
Cognitve Insight								-

7. Conclusion. The present study was planned to discriminate between deluded and non-deluded individuals on the basis of three independent variables namely, life positions, social injury, and cognitive insight. In order to test the proposed model, Predictive Discriminant Analysis was administered on the data. This technique is considered as a sophisticated procedure to view the data from different dimensions (Pyryt, 2004). Generally, the results are assessed on the basis of mean values of the groups and Canonical Correlation. In addition, the contribution of each predictor is determined through Standardized Discriminant Function Coefficients and Discriminant/Structure Loadings. The obtained results of the present research work are discussed below.

The mean values for deluded (M = -.505) and non-deluded groups (M = .540) showed that the two groups differ significantly from each other [$\chi^2(df = 6) = 13.66$, $p < .034$]. This inference was also displayed in the histogram distributions plotted for the groups (Figure 1 &2). The Canonical Correlation indicated that the model accounts for approximately 22% of variance in delusional beliefs.

Standardized Discriminant Function Coefficients indicate that I-,Others- and social injury contribute significantly in the prediction of delusions. Both these variables also obtained highest loadings on the discriminant function. These results are in agreement with previous studies (see, for instance, Budisa, et al, 2012; Lester, 1991) and theories (Berne, 1966). According to the theory of Transactional Analysis (Berne, 1966), when people are not accepting of themselves and others; believe that they are not worthy of any

affection and respect and similarly other people are also not worthy of any regard and love, they occupy a position of I-,Others- or I-, or Others-, and that this position may put them at risk for psychiatric conditions (Khan & Iqbal, 2014) [49]. The theory further proposed that these positions emerge from social rejection and social hurts. This hypothesis has been proved by the present study. The results denote that negative attitudes towards oneself and others and perception of social exclusion may predispose a person to cognitive errors and faulty beliefs (as shown by correlation coeffcients depicted in Table 4). This conclusion may further be explained on the basis of the personality theory of Carl Rogers (1961) [50]. One of the basic assumption of Carl Rogers' theory was that people are born with the need for self and others respect, if this inherent need is not satisfied, incongruence between true self and perceived self develops; more the incongruence, more the vulnerability for psychopathology. Following this theory, it may be argued that if the need for affiliation is the predominant need and it remains insatiated, the person compensates it through delusions of reference and grandeur etc.

Most surprising results were obtained for the relationship of cognitive insight and its subdimensions and delusions. Contrary to the theory of Beck et al (2009) and empirical studies, the results of the analysis suggested that the tendency for reality testing and the ability for correction of beliefs does not discriminate between deluded and non-deluded individuals. In addition, correlation coefficient between self-certainty and I+,Others+, though of small amount, suggest that people who like themselves and others tend to strictly hold to their beliefs. In a study conducted to explore the relationship of cognitive insight with psychosis (Cooke, Peters, &Kumari, 2010) [51], mixed results were obtained. The researchers concluded that "the self-certainty and self-reflection dimensions of cognitive insight have differential correlates, and probably different mechanisms, in psychosis." The results of the present study, however, needs to be interpreted with caution; further investigation is required to ascertain obtained data.

Predictive Discriminant Analysis also provides evidence for group membership. Classification analysis imply that 65% of the deluded were correctly classified in the group. This result has important implications. From the total of 31 deluded individuals, 11 participants may not qualify for the diagnosis of delusions. Similarly, 8 out of 29 non-deluded individuals may be experiencing some psychological problems, warranting clinical examination.

Delusions are implausible habitual beliefs present not only as a symptom of psychosis in many pathological conditions but prevalent in normal population also (Jones & van Os, 2001). In fact, they come to clinical attention only when the deluded individual's social and occupational maladaptive behavior exceeds way beyond social endurance and diagnostic criteria. Because of their universal consistency in human behavior, several psychological models have attempted to explain the development of delusions (Gul, 2014 [52]; McKay, Langdon, &Coltheart, 2005), though without much empirical support. It is expected that the present study adds to the existing literature on the etiology of delusions and will help in developing efficient treatment procedures.

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