



# MOON CYCLE AND BIRTH DATES IN SCHIZOPHRENIA AND BIPOLAR DISORDER

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*The seasonality of birth dates of schizophrenic and bipolar patients has been studied extensively. The moon cycle, another rhythmical influence, is unfoundedly believed to affect mental health. This pilot study investigated a possible relationship of the moon cycle with birth dates of schizophrenic and bipolar in-patients. Schizophrenic births peaked 5 days after and on the day of full moon. Bipolar births peaked 3 days after and on the day of full moon. These results suggest a statistical dependency between the moon cycle and birth dates of these patients and possible implications are discussed. Epidemiological verification of this relationship is required.*

## INTRODUCTION

Some professionals and lay people persist in the old belief that the moon may precipitate strange behaviour (Durm et al, 1986; Little et al 1987) despite insufficient proof (Bauer & Hornick, 1968). The hypothesized association between lunar phase and acting-out behaviour was disproved (Durm et al, 1986). The study by Little et al (1987) also failed to demonstrate a relationship between moon phase and the incidence of disruptive behaviour in inmates with psychiatric problems and Bauer & Hornick (1968) failed to show any relationship between moon phase and the number of patients consulting a psychiatric emergency service. No association between attempted suicide and the lunar cycle was found by Mathew et al (1991). Rogers et al (1991) also found no statistical level of significance in the relationship between parasuicide and the lunar cycle but demonstrated a cyclical variation of small amplitude with a sine-wave curve which peaked 2 days after full moon and 2 days after new moon. Some studies however reported a relationship between full moon and crime

reports (Thakur & Sharma, 1984) and self-poisoning (Thakur et al, 1980). Thakur attributed the influence of the moon on human behaviour to "human tidal waves" generated by gravitational pull of the moon on the water content of the body which is 50-60 % of the body weight. These "waves" cause physical, physiological and biochemical changes in the body including the brain which manifest as behaviour. Despite inconclusive evidence, the belief in a lunar influence on mental health remains unperturbed. Traditional terms like "lunacy" and "moonstruck" might reinforce this. Testing of this belief therefore remains topical. This pilot study investigated a possible relationship between birth dates as new variable and the moon cycle among in-patients with schizophrenia and bipolar disorder. The link between birth dates of schizophrenic and bipolar patients and the moon cycle follows in the wake of conclusive research regarding the association between seasonality as another rhythmical influence and the birth dates of schizophrenic and bipolar patients (Boyd et al, 1986). The aim of this study was to identify peak frequencies of birth dates (if any) of schizophrenic and bipolar



in-patients on the different days of the moon cycle.

## METHOD

The data for this descriptive study was obtained as in the preceding paper on birth and admission dates (Van Staden et al. in press). Inclusion and exclusion criteria were as for birth dates in the preceding study. Full moon was chosen as centre of the moon cycle and each day defined as  $x$  days before or after full moon or the day of full moon. The nearest full moon to each birth date was calculated and the number of days before or after full moon was noted. Due to natural inconsistencies in the length of the moon cycle (29 to 30 days from full moon to full moon), patients who were born 15 days before or after full moon ( $n=11$ ) were excluded from the study to prevent an artificial trough in frequencies of birth dates on these days. Two phases were arbitrarily chosen to be "around full moon" (i.e. the day of full moon, the 7 days before and the 7 days after full moon) and "away from full moon" (i.e. days 7 through 14 before and days 7 through 14 after full moon) for comparison with each other. The frequency of birth dates in the period before full moon was also compared with the period after full moon. The data was analysed using the z-test for ratios. This one-tailed test verified whether the calculated ratio was significantly greater than the expected ratio (1:29). The calculated ratio was obtained by dividing the number of births for each day by the total number of births. The z-value is equivalent to the square root of the chisquare value.

## RESULTS

The results reported were limited to statistically significant peaks. The frequency of birth dates of schizophrenic patients ( $n=429$ ) peaked highly significantly 5 days after full moon ( $z=2.701, p=0.0035$ ) and significantly on the day of full moon ( $z=1.907, p=0.028$ ).

The male schizophrenic patients ( $n=294$ ) peaked highly significantly 5 days after full moon ( $z=3.152, p=0.00081$ ) and significantly 7 days before full moon ( $z=1.874, p=0.031$ ) and the females ( $n=135$ ) peaked significantly on the day of full moon ( $z=2.049, p=0.02$ ). The bipolar patients ( $n=26$ ) had two significant peaks which occurred on the day of full moon ( $z=2.261, p=0.012$ ) and 3 days after full moon ( $z=2.261, p=0.012$ ). When the frequency of births before full moon was compared with the frequency after full moon, no statistically significant difference was found. The same applied for the period "around full moon" compared to the period "away from full moon".

## DISCUSSION

The birth date of schizophrenic and bipolar patients has been a well known target for research on the rhythmical influence of seasonality (Boyd et al, 1986). Other rhythmical influences like that of the moon on the birth dates of schizophrenic and bipolar patients have not yet been investigated. The influence of the moon was previously studied in relation to behaviour and inconclusive or predominantly "negative" results were found, as discussed in the introduction above. This study suggests certain peak frequencies of the births of patients with schizophrenia and bipolar disorder in the moon cycle. Previous studies on the seasonality of birth dates linked it to aetiology (Bradbury & Miller, 1985). Likewise the moon cycle might have some aetiological or predispositional relevance to schizophrenia and bipolar disorder. The relationship of the moon with the birth dates of schizophrenic and bipolar patients also implies that these disorders already exist before birth. The factors that initiate labour are uncertain (Hariharan et al, 1993). Exploration of lunar influences might shed some light on these factors, on how they are modified by the schizophrenic and bipolar disease processes, and help to distinguish between foetal and maternal factors which initiate

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labour, as well as the relative foetal and maternal roles in these illnesses. The patients born on these peak days might constitute a subgroup of patients with these disorders and future studies could compare this subgroup with other schizophrenic and bipolar patients. This moon cycle phenomenon should be explored in relation to other disorders, geographical location, biochemistry and social differences before its full meaning will be comprehensible. The peaks which occurred in this study do not necessarily imply a moon cycle, but any cycle of 29 to 30 days duration. The continuation of a modified menstrual cycle into gestation and even up to the time of labour is another possibility. The moon cycle however seems to be the more likely one because it is not subject to individual

variation. As evident from this pilot study, an epidemiological study is indicated which would include more patients and also out-patients, controlled with the general population. Such an epidemiological study could validate the phenomena suggested here. Further research into possible links between lunar influence and mental illness is justified in the context of scepticism on the one hand and credulous belief on the other hand (Rodgers et al, 1991). An apparently obscure relevance of a relationship between the moon cycle and the birth dates of schizophrenic and bipolar patients can be elucidated by future research.

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