

Astrological Signs as Determinants of Extroversion and Emotionality: An Empirical Study

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ABSTRACT. Astrological theories assume a link between an individual's personality traits and the positions of the sun, moon, and planets in the zodiac at the moment of birth. Previous research has examined the relation of the sun sign to personality traits, but moon and ascendant signs have not been studied in relation to personality traits. The dominance effect of the sun on men and the moon on women has also not been empirically researched. Eysenck Personality Inventory (EPI) scores on extroversion and emotionality were obtained from 190 first-year university students. Date, time, and location of birth were requested, to establish the positions of the sun, moon, and ascendant in positive, negative, and water signs for each individual. Multiple *t* tests showed a significantly greater mean extroversion score for the group with both the sun and the moon in positive signs than for the group with both in negative signs. No other differences in means were significant. The findings generally did not support theories claiming that tendencies toward extroversion and emotionality are determined by astrological signs.

EYSENCK AND NIAS (1982) have defined astrology as the study that "deals with the connections believed to exist between the positions of the planets at the moment of someone's birth and that person's character, development, profession, marriage and general life history" (p. 12). Astrology gives a description of the personality characteristics associated with the signs of the zodiac, the planets, and other features of the horoscope, but no explanation is given for why particu-

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lar signs are associated with particular descriptions or how the descriptions are derived. To validate the descriptions, a number of investigators have examined the relations between personality traits as measured by reliable and valid psychological tests and various astrological signs.

According to Western or occidental astrological theory (Arroyo, 1975; Carter, 1947), people born when astronomical bodies of the solar system are in the positive signs of Aries, Gemini, Leo, Libra, Sagittarius, and Aquarius are predisposed toward extroversion, whereas those born when the bodies are in the negative signs of Taurus, Cancer, Virgo, Scorpio, Capricorn, and Pisces tend toward introversion. The positive signs are believed to express an active, outgoing, masculine energy, whereas the negative signs symbolize passive, self-repressive, feminine qualities. Furthermore, the sun is supposed to be the dominant force in men, and the moon is supposed to be dominant in women (Arroyo, 1975; Greene, 1978). The astronomical bodies that determine a person's horoscope include the sun, moon, and the eight planets other than Earth. Presumably, a person who is born with more of the bodies in the positive signs has a stronger tendency toward extroversion than a person with fewer; similarly, a person with more bodies in the negative signs has a stronger predisposition toward introversion than a person with fewer.

Another hypothesis, investigated by Mayo, White, and Eysenck (1978), proposed that people born with the sun, moon, or planets in the "water" signs of Cancer, Scorpio, or Pisces tend to be more sensitive and emotional than people who have the bodies in other elemental signs (earth, air, fire) in their horoscopes. Mayo et al. found support for both hypotheses. Participants born with the sun in a positive sign had a significantly ($p < .05$) higher mean extroversion score on the Eysenck Personality Inventory (EPI) than the group with the sun in a negative sign, and those with the sun in a water sign had a significantly higher mean on the emotionality scale than the others in the study did.

Their findings, however, could possibly be explained by a bias introduced in the selection of the sample. All the participants were selected after having approached one of the authors for an astrological consultation. They may have been influenced by their knowledge and awareness of astrological symbolism, predisposing them to answer the EPI items in ways that would confirm the hypotheses. A subsequent study by Eysenck (1979, cited in Crowe, 1990) suggested that such self-attribution may be a likely explanation for the results of Mayo et al. (1978).

Veno and Pamment (1979) replicated the study of Mayo et al. (1978) with participants born in the southern hemisphere, to see whether the differences are reversed for people born there. There was no support for either hypothesis in either direction. The group with a positive sun sign did not have a significantly lower or higher mean score on extroversion than the group with a negative sun sign did; those with the sun in a water sign were not lower or higher than the others on emotionality. In a similar study, using the Eysenck Personality Question-

naire, Saklofske, Kelly, and McKerracher (1982) found no support for the positive/negative sun-sign hypothesis.

In another replication, Van Rooij, Brak, and Commandeur (1988) found a trend ($p < .056$) in the positive/negative sun-sign differences, after controlling for participants' self-attributions by using data originally acquired for a purpose unrelated to astrology. But the hypothesis that extroversion scores increase proportionately with the number of planets in the positive signs of the horoscope was not supported. The positions of the planets can usually be determined with the help of an ephemeris, if the date of birth is known. However, if a planet is about to change signs, it is not always possible. Mercury and Venus stay at least a few weeks in a sign, whereas the outer planets take several years to move through each sign of the zodiac. Thus, to calculate the horoscopes, it may be necessary to know the time and location of a person's birth. Van Rooij et al. did not indicate how accurate the data they used were, but it seems unlikely that the exact time of birth would have been noted on a questionnaire unrelated to astrology.

Using the dates, times, and locations of births, Gauquelin (1983) discovered some significant correlations between personality traits and the angular positions of some astrological bodies at birth, especially for the moon, Mars, Jupiter, and Saturn. The correlations were found only for people with natural births, not for ones whose births had been induced (Eysenck & Nias, 1982; Gauquelin, 1983).

Most of the empirical studies (Eysenck & Nias, 1982; Gauquelin, Gauquelin, & Eysenck, 1979; Mayo et al., 1978; Pellegrini, 1973; Saklofske et al., 1982; Van Rooij et al., 1988; Veno & Pamment, 1979) have focused on sun-sign astrology, which involves determining the position of the sun in a sign of the zodiac at birth. Later studies (Gauquelin, 1983) have incorporated the planets' positions, which, except for that of the moon, can usually be determined without knowing the time of a person's birth. Without a time of birth, however, the moon's position cannot be determined as reliably as that of a planet because it changes sign position approximately once every 2.3 days.

Astrological theory (Arroyo, 1975; Cunningham, 1978; Greene, 1978) emphasizes that the position of the sun is only one of the three most important factors in a horoscope. The other two are the positions of the moon and the ascendant, which is the sign of the zodiac rising on the eastern horizon at the time of a person's birth. Because the ascendant changes approximately every 2 hr, it is essential to know participants' times of birth if this variable is to be investigated. We have been unable to find any research that empirically examines the influence of all three major factors—the sun, moon, and ascending sign positions—on extroversion and emotionality. Nor have we been able to find empirical research that looks at the dominant effect of the sun on men and the moon on women.

On the basis of astrological theory, we hypothesized that people with the sun, moon, or ascendant in a positive sign at birth would prove to be more extroverted than people with the sun, moon, or ascendant in a negative sign. Our second hypothesis was that people with the sun, moon, or ascendant in a water sign

(Cancer, Scorpio, or Pisces) would be more emotional than people not born under a water sign. Third, if the sun is the dominant force in men and the moon is the dominant force in women, men with the sun in a positive sign should be more extroverted than men with the sun in a negative sign, and women with the moon in a positive sign should be more extroverted than women with the moon in a negative sign.

Method

Participants

First-year university students ($N = 190$) enrolled in an introductory psychology course (136 women and 54 men, mean age = 20.8 years) volunteered to complete the materials anonymously but agreed to provide the date, time, and location of birth. Almost all of them were born in New Zealand or Australia. Participants were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Materials and Procedure

Form B of the EPI (Eysenck & Eysenck, 1964) was used to measure extroversion/introversion and emotionality (neuroticism). The EPI consists of 33 items for extroversion and 24 items for emotionality in a yes/no format. Test-retest reliabilities range from .80 to .97 for the separate scales, and split-half reliabilities range from .74 to .91. Attached to the back of each EPI was a questionnaire asking the participant's gender, date, time, and location of birth. No reference to astrology was made until the participants were given a summary of the results of the study several weeks later. The participants completed the materials in class and returned them to one of the researchers before leaving the room. Their responses to the EPI were scored on the two personality traits.

From the dates and times of birth, participants were grouped according to whether the sun, moon, and ascendant were in a positive sign (Aries, Gemini, Leo, Libra, Sagittarius, or Aquarius) or a negative sign (Taurus, Cancer, Virgo, Scorpio, Capricorn, or Pisces) of the zodiac at their births. A computer program (Vermist, 1986) was used for calculations, with manuals (Chase, 1982; Hieratic, 1977, 1979) for references and for calculating the position of the ascendant (Michelsen, 1976). We computed multiple t tests of the significance ($p < .05$) of differences between mean scores on positive and negative signs, singly or in combination. Thus, the mean extroversion scores for the groups with sun, moon, and ascendant in a positive sign were compared singly and in pairs with the respective means in a negative sign.

Comparisons included sun and moon both in positive signs compared with sun and moon in negative signs; and sun and ascendant, moon and ascendant, and sun,

moon, and ascendant in positive compared with the same combinations in negative signs. Similarly, those born with sun, moon, or ascendant in water signs (Cancer, Scorpio, or Pisces) were compared with the rest of the sample on emotionality. For sex differences, we compared the mean extroversion score for men with the sun in a positive sign with the mean score for men with the sun in a negative sign, and we compared the mean extroversion score for women with the moon in a positive sign with the mean score for women with the moon in a negative sign.

Because the effects of the moon and ascendant sign positions have not been examined in previous research, we used two-tailed, rather than one-tailed, tests, for conservative tests of the significance of differences between means. All calculation and statistical tests were completed with a computer program based on SPSSx (Nie, 1983). Data that had missing values were eliminated from the analyses, so the various sign groups consisted of different numbers of participants.

Results

The means and standard deviations (*SDs*) of the EPI extroversion scores according to the positions of the sun, moon, ascendant, and combinations for positive and negative signs are shown in Table 1, which also includes the *t* values for the two-tailed *t* tests of significance of differences ($p < .05$) in means between positive and negative signs. The means, standard deviations, and tests of significance of differences in means for water and other elemental signs on the EPI Emotionality Scale are shown in Table 2. The means were higher and the standard deviations were lower, but within acceptable ranges, for student norms specified for the extroversion ($M = 13.44$, $SD = 4.20$) and emotionality ($M = 11.04$, $SD = 4.82$) scales from Form B of the EPI (Eysenck & Eysenck, 1964). Only the group with both the sun and the moon in positive signs had a significantly greater mean extroversion score ($M = 16.56$, $SD = 2.66$) than the group with both in negative signs did ($M = 14.89$, $SD = 3.66$), $t(70) = 2.21$, $p < .05$.

There were no significant differences between mean emotionality scores for those born with sun, moon, ascendant, or combinations in water signs and the corresponding mean scores for the remaining participants. There was no significant difference between mean extroversion scores for men with the sun in a positive sign ($M = 14.96$, $SD = 3.07$) and men with the sun in a negative sign ($M = 15.69$, $SD = 4.11$), $t(51) = -0.72$, $p > .05$. Similarly, there was no significant difference between mean extroversion scores for women with the moon in a positive sign ($M = 16.32$, $SD = 2.96$) and women with the moon in a negative sign ($M = 15.57$, $SD = 3.96$), $t(71) = 0.74$, $p > .05$.

Discussion

The hypothesis that people with the sun, moon, or ascendant in a positive sign at birth are more extroverted than people with them in a negative sign was

TABLE 1
Mean Extroversion Scores for Positive and Negative Sun, Moon,
and Ascendant Signs

Sign	Positive	Negative	<i>t</i>	<i>df</i>
Sun				
<i>M</i>	16.00	15.44	1.04	183
<i>SD</i>	3.49	3.82		
<i>n</i>	94	91		
Moon				
<i>M</i>	16.11	15.31	1.28	145
<i>SD</i>	3.58	4.00		
<i>n</i>	70	77		
Ascendant (Asc.)				
<i>M</i>	15.69	15.85	-0.23	84
<i>SD</i>	3.40	3.64		
<i>n</i>	45	41		
Sun + Moon				
<i>M</i>	16.56	14.89	2.21*	70
<i>SD</i>	2.66	3.66		
<i>n</i>	36	36		
Sun + Asc				
<i>M</i>	16.38	16.11	0.23	37
<i>SD</i>	3.78	3.41		
<i>n</i>	21	28		
Moon + Asc.				
<i>M</i>	16.45	15.33	1.16	41
<i>SD</i>	3.16	3.15		
<i>n</i>	22	21		
Sun + Moon + Asc.				
<i>M</i>	16.00	15.56	0.29	32
<i>SD</i>	4.34	2.70		
<i>n</i>	25	9		

* $p < .05$.

generally not supported. Moreover, mean extroversion scores increased only slightly with the number of positive signs in participants' horoscopes (see Table 1). Similarly, our second hypothesis, that people with the sun, moon, or ascendant in a water sign are more emotional than people not born under a water sign, was not supported (see Table 2).

Three aspects of our study may have masked differences in means when significant differences may have existed. First, we did not ascertain whether the participants' births were natural or induced. Previous findings (Eysenck & Nias, 1982; Gauquelin, 1983) found relations between astrological signs and personality traits, but only for people with natural births. Second, some participants may

TABLE 2
Mean Emotionality Scores for Water and Nonwater Sun, Moon,
and Ascendant Signs

Sign	Water	Nonwater	<i>t</i>	<i>df</i>
Sun				
<i>M</i>	15.08	14.17	1.19	183
<i>SD</i>	3.10	4.33		
<i>n</i>	36	149		
Moon				
<i>M</i>	14.13	14.56	-0.57	146
<i>SD</i>	4.35	3.96		
<i>n</i>	40	108		
Ascendant (Asc.)				
<i>M</i>	14.90	14.63	0.32	83
<i>SD</i>	3.66	3.47		
<i>n</i>	21	64		
Sun + Moon				
<i>M</i>	13.75	14.17	-0.20	86
<i>SD</i>	2.50	4.16		
<i>n</i>	4	84		
Sun + Asc				
<i>M</i>	15.00	14.55	0.27	59
<i>SD</i>	3.39	3.56		
<i>n</i>	5	56		
Moon + Asc.				
<i>M</i>	16.40	14.91	1.03	47
<i>SD</i>	5.03	2.81		
<i>n</i>	5	44		

Note. *ns* vary because of missing data. None of the differences in means is significant. Statistics for the three-way combination were omitted because none of the participants were born under all three water signs.

have been mistaken when they gave times of birth, thus providing inaccurate data for moon and ascendant sign positions. Third, it was not possible to test for the significance of differences in mean emotionality scores for sun, moon, and ascendant combined in the water signs, compared with the other elemental signs combined, because none of the students had all three water signs in their horoscopes.

As a further test of the water sign hypothesis, we examined the sun, moon, and ascendant water signs for men and women separately. Women usually have greater mean emotionality scores on the EPI (Eysenck & Eysenck, 1964) than men do, and they are more likely than men to believe in astrology (Clarke, 1991; Messer & Griggs, 1989). For our sample, the women's mean score of 14.84 (*SD*

= 3.89) on the EPI Emotionality Scale was significantly greater than the men's mean score of 13.10 ($SD = 4.48$), $t(183) = 2.63$, $p < .01$.

With a greater belief in astrology, women may believe in and be more aware than men of the purported influence of the water signs on emotionality, leading to a bias in their responses on the EPI. We would then expect that women born with a water sign would score higher on emotionality than women born with other elemental signs. The means for men and women on the sun, moon, and ascendant signs are shown in Table 3. The standard deviations for women show scores with ranges similar to the men's, so that differences are not masked by scores being close together. Even with the possible effect of a self-attribution bias, none of the differences in mean emotionality scores for women were significant.

A very large sample may yield larger groups for testing various combinations of signs, assuming that it is possible to accurately determine the times of births and whether they were natural rather than induced. But because almost none of the sign positions for the sun, moon, ascendant, or their combinations showed significant differences or increases in means with increasing numbers of signs in the horoscope, it is unlikely that further comparisons or even inclusion of signs from the positions of the planets would reveal differences beyond chance.

Because our participants completed the EPI before giving information about their births and no reference to astrology was made during the collection of data.

TABLE 3
Men's and Women's Mean Emotionality Scores for Water and Nonwater Sun, Moon, and Ascendant Signs

Sign	Water		Nonwater		Men		Women	
	Men	Women	Men	Women	<i>t</i>	<i>df</i>	<i>t</i>	<i>df</i>
Sun								
<i>M</i>	13.78	15.52	12.95	14.67	0.50	50	1.01	131
<i>SD</i>	3.27	5.07	4.71	3.76				
<i>n</i>	9	27	43	106				
Moon								
<i>M</i>	13.56	14.50	12.58	15.18	0.66	40	-0.81	104
<i>SD</i>	4.80	4.08	4.62	3.53				
<i>n</i>	16	24	26	82				
Ascendant								
<i>M</i>	14.80	14.94	13.17	14.96	0.74	15	-0.03	66
<i>SD</i>	5.07	3.32	3.76	3.34				
<i>n</i>	5	16	12	52				

clues that this study involved astrology and personality were minimal, and it is unlikely that answers were influenced by self-attributions. With very large numbers of participants, it may be possible to find some trends in personality traits that are related to astrological signs (Gauquelin, 1983), but the trends may be artifacts of self-attributions (Eysenck & Nias, 1982; Van Rooij et al., 1988). For example, Clarke (1991) found that 37% of 1,048 students similar to the present sample indicated some degree of belief in astrology. Of those, some of them may have been aware that positive sun and moon signs are purported to predispose one toward extroversion. Eysenck and Nias (1982) found that people with some belief in astrology were most likely to attribute personality traits consistent with their sun sign to themselves. Such attribution could account for trends and the occasional significance of differences between means found in studies such as ours.

The findings from our study add further weight to evidence from previous research (Saklofske et al., 1982; Van Rooij et al., 1988; Veno & Pamment, 1979) that astrological theory is incorrect in claiming that positive astrological signs predispose individuals toward extroversion and that water signs predispose individuals toward emotionality. Further, it is incorrect to assume that the sun is the dominant force in men and the moon in women. The evidence from twin and adoption studies (Eysenck & Nias, 1982) suggests that it is more likely that there is some biological predisposition toward these traits that can be modified by environmental influences.

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