



Software Conventions and the Reliability of Nadi Coordinates Classification: A Couple-Level Analysis of Verdict Reversals and Their Statistical Consequences

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Abstract

A same-Nadi result on the Nadi coordinates in Ashtakoota matching is widely used to accept or reject marriage proposals in India, and it is also the variable a researcher would need to measure in order to test whether horoscope matching predicts marital outcomes. This paper examines how reliably software produces that verdict for couples and what the measured level of disagreement would do to an outcome study. Using a dataset of 20,000 simulated births (1970 to 2005, ten Indian cities) paired into 10,000 couples, we compared the verdict from a reference configuration (geocentric Moon, Lahiri ayanamsa) with verdicts under alternative ayanamsas, topocentric correction and birth-time error.

The Raman ayanamsa reversed the verdict for 9.89% of couples (Cohen's $\kappa = 0.77$). Topocentric correction reversed 3.70% ($\kappa = 0.92$), and a one-hour error in both birth times reversed 3.92% ($\kappa = 0.91$). In Monte Carlo simulations, disagreement at the Raman and Lahiri rate removed roughly a fifth to a quarter of a true log odds ratio: a true odds ratio of 2.0 appeared as 1.72 and one of 3.0 as 2.38. The number of couples needed for 80% power rose from about 1,450 to 2,560 for a true odds ratio of 1.5, and from about 440 to 720 for a true odds ratio of 2.0. Misclassification did not raise the false-positive rate. We conclude that outcome studies of Nadi coordinates must fix and report their software settings in advance, and we propose a minimum reporting checklist.

Keywords: Nadi coordinates, inter-convention agreement, Cohen's kappa, misclassification bias, statistical power, horoscope matching, research design

1. Introduction

In Ashtakoota matching, a couple whose partners share the same Nadi scores zero on Nadi koota, losing 8 of the 36 available points. Families often treat this result as decisive. For a researcher, the same verdict is the exposure variable in any study that asks whether horoscope matching predicts divorce, conflict or marital satisfaction.

A companion paper (Saini & Gupta, 2026) showed that the Nadi assigned to an individual depends heavily on software settings. Two ephemeris engines agreed almost perfectly, but the choice of ayanamsa changed the Nadi of up to 8% of individuals, and topocentric correction changed about 3%. That paper concentrated on individuals. The present paper moves to the couple, which is the unit at which the verdict is actually given, and asks two questions. How often do reasonable software settings give the same couple opposite verdicts? And what would that level of disagreement do to the effect sizes, power and sample-size requirements of an empirical study?



The answer matters to two audiences. For families, it shows how much a verdict depends on the program they happen to use. For researchers, it sets out the minimum conditions a study of Nadi coordinates must meet before its results can be trusted in either direction.

The study had three objectives:

1. to measure the agreement between Nadi coordinates verdicts produced under different ayanamsa, positional and birth-time settings;
2. to estimate how much this disagreement attenuates a true association between Nadi coordinates and a marital outcome; and
3. to estimate how many couples an outcome study would need to reach 80% power with and without such disagreement.

2. Review of Literature

2.1 Outcome tests of astrology

Controlled tests have not found astrological effects. Carlson (1985) showed that astrologers could not match natal charts to personality profiles better than chance. Narlikar et al. (2009) found that Indian astrologers could not tell the charts of bright children from those of children in special schools. Voas (2007) found that Sun-sign pairings among about 10 million married couples in England and Wales occurred at chance rates. Dean and Kelly (2003) reviewed decades of such work with the same conclusion. None of these studies, however, examined the reliability of the astrological input itself, and none dealt with Nadi koota.

2.2 Sources of disagreement in Nadi assignment

Nadi is derived from the Moon's sidereal longitude, which depends on the ayanamsa a program applies. India's Calendar Reform Committee recommended the Lahiri ayanamsa (Government of India, 1955), but other systems remain in use, and their J2000 values span more than 2.3° (LibEphemeris, n.d.). Programs also differ on whether they correct the Moon's position for parallax, and birth times are often approximate. The companion paper quantified each of these sources for individuals (Saini & Gupta, 2026).

2.3 Misclassification and statistical power

Random misclassification of a binary exposure that is unrelated to the outcome (non-differential misclassification) biases the observed association towards the null (Bross, 1954). It also inflates the variance of the estimate relative to its size, so that a larger sample is needed to detect the same true effect. Agreement between two binary classifications is conventionally measured by Cohen's (1960) kappa and interpreted on the scale proposed by Landis and Koch (1977), where values from 0.61 to 0.80 are "substantial" and those above 0.80 "almost perfect".

3. Methodology

3.1 Data

The analysis reuses the dataset built for the companion study (Saini & Gupta, 2026). It contains 20,000 birth instants drawn uniformly at random between 1970 and 2005 (UTC) and assigned to ten Indian cities. The Moon's longitude was computed with PyEphem (Rhodes, 2011) and checked against Astropy (Astropy Collaboration, 2022). Ayanamsa values followed LibEphemeris (n.d.) and were advanced at 5,028.8 arcseconds per century. The births were

paired at random into 10,000 couples. No real birth records or human participants were involved.

3.2 Verdict and comparisons

Each person's nakshatra and Nadi were assigned by the standard scheme, and a couple was classed as having matching Nadi coordinates when both shared a Nadi. Cancellation rules were not applied. The reference verdict used a geocentric Moon, the Lahiri ayanamsa and the recorded birth times. It was compared with verdicts obtained under the Raman and KP ayanamsas, a topocentric Moon, both birth times shifted 30 or 60 minutes later, and an independent random error (standard deviation 20 minutes) added to each partner's birth time. For each comparison we computed the percentage of couples whose verdict reversed and Cohen's kappa.

3.3 Attenuation and power simulations

Hypothetical outcome studies were simulated with a true Nadi coordinates match rate of one third and a 15% base rate of an adverse outcome among couples without a Nadi match. Each couple's observed verdict was either left unchanged (error-free) or flipped with probability 0.0989, the Raman and Lahiri reversal rate. For attenuation, the true odds ratio was varied from 1.0 to 3.0 in cohorts of 3,000 couples (300 runs each). For power, true odds ratios of 1.25, 1.5 and 2.0 were crossed with ten sample sizes from 200 to 4,000 couples (600 runs each). Power was the share of runs in which a two-sided Wald test of the log odds ratio was significant at $\alpha = .05$. The sample size for 80% power was found by linear interpolation between the simulated sizes. All analyses used Python 3 with NumPy, PyEphem, Astropy and Matplotlib.

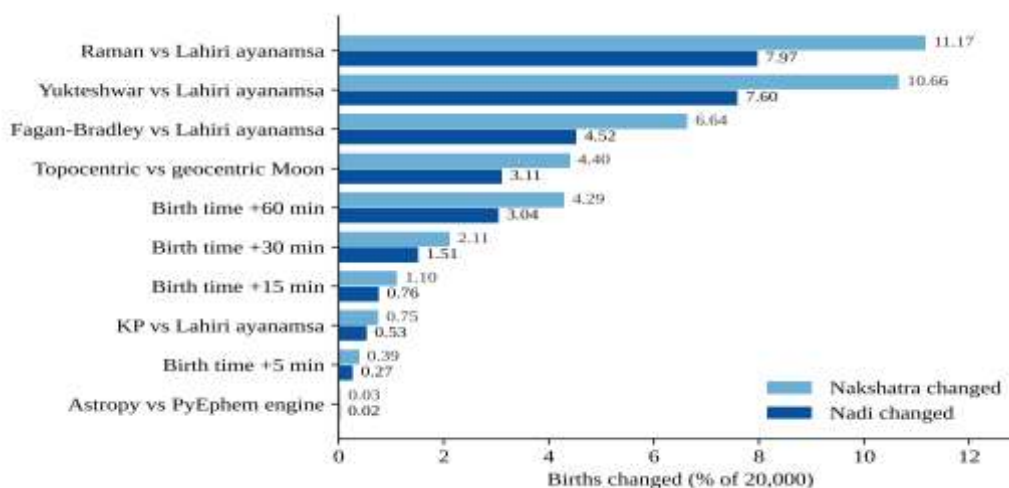
4. Results

4.1 Individual-level background

Figure 1, adapted from the companion paper, summarises how often each setting changed an individual's nakshatra and Nadi. The ayanamsa dominated, the two ephemeris engines changed almost nothing, and topocentric correction had about the same effect as a one-hour error in birth time.

Figure 1

Percentage of births whose nakshatra and Nadi changed under each condition



Source: Adapted from Saini and Gupta (2026); 20,000 simulated births, 1970 to 2005, ten Indian cities.

4.2 Agreement between couple verdicts

Under the reference settings, 32.1% of the 10,000 couples shared Nadi coordinates. Table 1 and Figure 2 report how often each alternative setting reversed that verdict.

Table 1

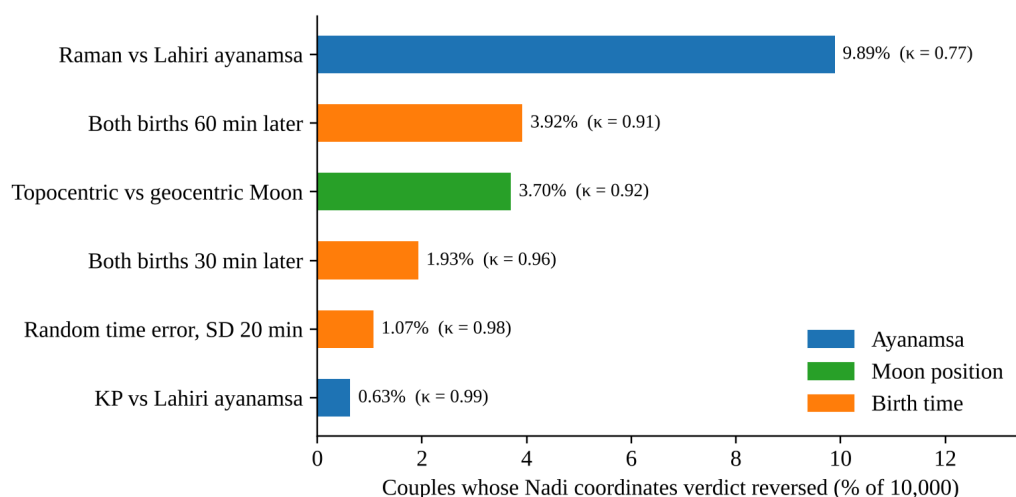
Reversal of the Nadi coordinates verdict and agreement with the reference (10,000 simulated couples)

Comparison with reference	Verdict reversed (%)	Cohen's κ	Landis and Koch category
Raman vs Lahiri ayanamsa	9.89	0.77	Substantial
Both births 60 min later	3.92	0.91	Almost perfect
Topocentric vs geocentric Moon	3.70	0.92	Almost perfect
Both births 30 min later	1.93	0.96	Almost perfect
Random time error, SD 20 min, each partner	1.07	0.98	Almost perfect
KP vs Lahiri ayanamsa	0.63	0.99	Almost perfect

Note. Reference = PyEphem engine, geocentric Moon, Lahiri ayanamsa, recorded birth times. Source: Saini and Gupta (2026) and the present analysis.

Figure 2

Percentage of couples whose Nadi coordinates verdict reversed, with Cohen's kappa



Source: Computed by the authors from 10,000 simulated couples.

Only the Raman ayanamsa produced agreement below the "almost perfect" band, but its effect was large: about one couple in ten received the opposite verdict. Topocentric correction and a one-hour time error each reversed close to 4% of verdicts. A realistic random error in



birth time reversed about 1%, and the KP ayanamsa, which lies close to Lahiri, reversed fewer than 1%.

Kappa values above 0.90 can sound reassuring, but they describe agreement across all couples. For the couples whose verdicts reversed, the outcome was the opposite recommendation on whether to proceed with the marriage.

4.3 Attenuation of a true association

Table 2 and Figure 3 show the median odds ratio a study of 3,000 couples would observe at each true odds ratio, with and without disagreement at the Raman and Lahiri rate.

Table 2

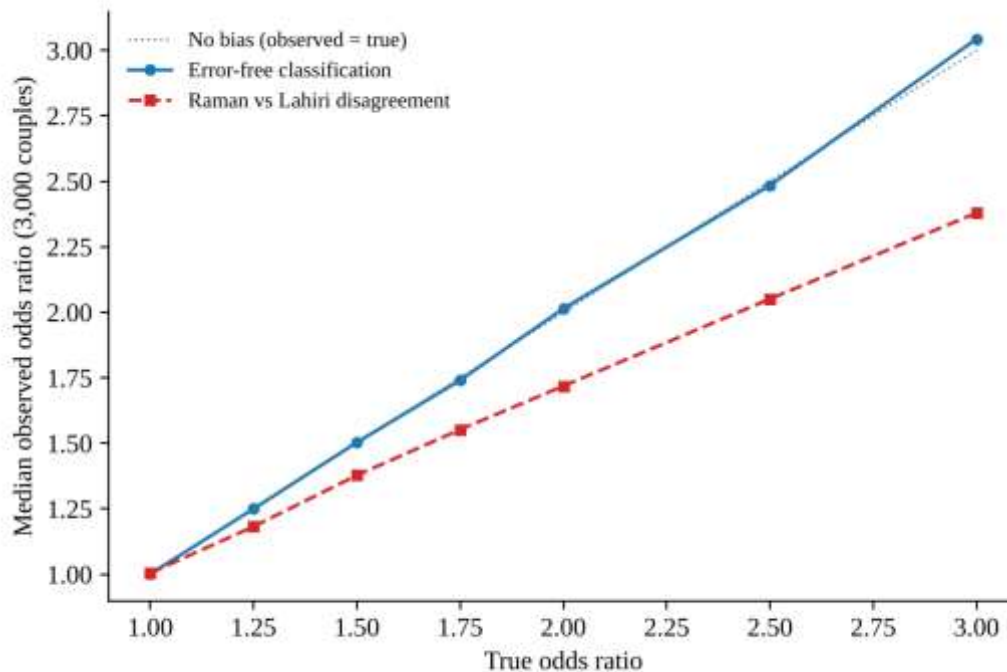
Median observed odds ratio by true odds ratio (3,000 couples, 300 simulations per value)

True OR	Observed error-free	OR, Observed OR, with disagreement	Share of log OR retained
1.00	1.00	1.00	Not applicable
1.25	1.25	1.18	0.74
1.50	1.50	1.38	0.79
1.75	1.74	1.55	0.78
2.00	2.01	1.72	0.78
2.50	2.48	2.05	0.78
3.00	3.04	2.38	0.79

Note. Share of log OR retained = $\ln(\text{observed OR with disagreement}) / \ln(\text{true OR})$. Simulated outcomes with a 15% base rate, for illustration only.

Figure 3

Observed against true odds ratio, with and without verdict disagreement



Source: Monte Carlo simulation by the authors (3,000 couples, 300 runs per point).

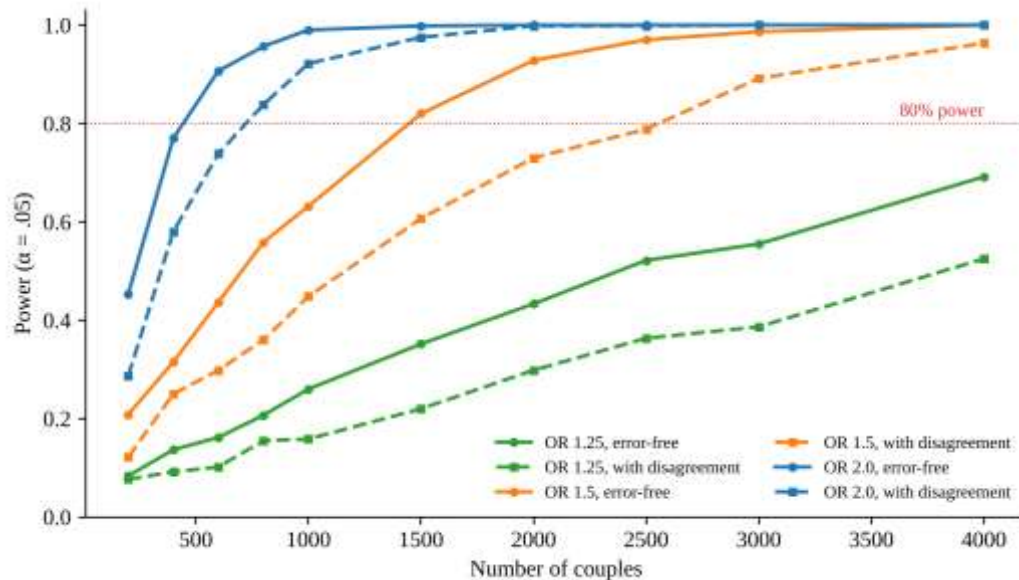
With error-free classification the observed odds ratio tracked the true value closely. With disagreement, the observed value fell short at every effect size, keeping about 0.74 to 0.79 of the true log odds ratio. The shortfall grew in absolute terms as the effect grew, so that a true odds ratio of 3.0 appeared as 2.38. When the true odds ratio was 1.0, misclassification created no spurious effect.

4.4 Power and required sample size

Figure 4 plots power against sample size for three true effect sizes. Dashed lines show the same studies with disagreement at the Raman and Lahiri rate. Table 3 gives the sample size needed for 80% power.

Figure 4

Statistical power by number of couples and true odds ratio



Source: Monte Carlo simulation by the authors (600 runs per point, $\alpha = .05$).

Table 3

Approximate number of couples needed for 80% power

True OR	Error-free classification	With Raman and Lahiri Increase disagreement	Increase
1.25	More than 4,000	More than 4,000	Not estimated
1.50	About 1,450	About 2,560	About 77%
2.00	About 440	About 720	About 64%

Note. Interpolated from simulated sample sizes of 200 to 4,000 couples; $\alpha = .05$, two-sided. OR = odds ratio.

Disagreement lowered power at every sample size short of saturation. To detect a true odds ratio of 1.5 with 80% power, a study would need about 1,450 couples with error-free labels but about 2,560 with disagreement at the Raman and Lahiri rate, an increase of roughly three quarters. For a true odds ratio of 1.25, neither version reached 80% power with 4,000 couples.

5. Discussion

The couple is the level at which a Nadi verdict affects decisions, and at that level the choice of ayanamsa matters a great deal. Moving from Lahiri to Raman reverses one verdict in ten. The other settings tested reverse between about 1% and 4%. These are not errors in the usual sense, since every setting is defended by some tradition. That is why they cannot be removed by better astronomy. They can only be removed by agreeing on a convention and stating it.



For research, the effects run in one direction. Misclassification of this kind does not invent an association; the false-positive rate stayed at its nominal level. It does hide a real one. If Nadi coordinates carried a genuine effect on marital outcomes, a study that mixed conventions or failed to fix one would underestimate that effect by about a fifth on the log scale and would need roughly 65% to 75% more couples to detect it. A negative result from such a study is therefore weaker evidence than its sample size suggests.

This has a practical consequence for anyone planning such a study. Collecting accurate birth times for both partners in thousands of couples is already difficult. Adding an unstated software convention raises the required numbers further and makes the result harder to interpret. Pre-registration of the convention removes this problem at no cost. Table 4 lists the minimum settings a study should report.

Table 4

Minimum reporting checklist for studies using software-computed Nadi verdicts

Setting	Options in common use	What to report
Ayanamsa	Lahiri, Raman, KP, Yuktेशwar, others	Name and reference value; fixed before data collection
Moon position	Geocentric or topocentric	Which one, and the coordinates used for topocentric
Ephemeris	Swiss Ephemeris, analytic theories	Program name and version
Birth-time source	Certificate, hospital record, recall	Source and stated precision for each partner
Time zone handling	Standard time, war time, local mean time	Rule applied, especially for older births
Cancellation rules	Vary by tradition	Whether applied, and which rules
Sensitivity analysis	Alternative conventions	Results under at least one alternative ayanamsa

Note. Proposed by the authors on the basis of the present results and Saini and Gupta (2026). The study has limits. The births were simulated rather than drawn from records, and real birth times cluster on round numbers. The outcome model assumes a 15% base rate and a simple binary outcome, and it treats misclassification as random. Real software disagreement is random with respect to marital outcomes, so that assumption is reasonable, but real studies may face other biases as well. Commercial programs were not tested directly, and cancellation rules were not applied.



6. Conclusion

Software conventions reverse the Nadi coordinates verdict for between about 1% and 10% of couples, depending on the setting changed. At the largest of these rates, a real association between Nadi coordinates and a marital outcome would lose about a fifth of its log odds ratio, and a study would need roughly two thirds to three quarters more couples to detect it. The same disagreement does not produce false positives. Studies of Nadi-based marital prediction should therefore fix their ayanamsa, positional model and birth-time rules before collecting data, report them in full, and show results under at least one alternative convention. Families and counsellors should know that a different program can give a different verdict about the same couple.

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