International Journal of Linguistics, Literature and Translation
ISSN: 2617-0299 (Online); ISSN: 2708-0099 (Print)
DOI: 10.32996/ijllt
Journal Homepage: www.al-kindipublisher.com/index.php/ijllt

IJLLT
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

Reference-Based Formation and Typology of Daytime Terms in Kra-Dai Languages

Zuqi Li

School of Literature, Guizhou University of Finance and Economics, Guiyang, Guizhou 550025, China

Corresponding author: Zuqi Li, **Email**: bwordson763@gmail.com

| ABSTRACT

Based on the Kra-Dai data recorded on the Chinese Language Resources Protection Project platform, 207 items under the standardized prompts "morning–noon–afternoon" across all 69 survey sites are examined. Of these, 205 have recorded forms: 202 are assigned to seven reference-based word-formation types, while the specific word-formation types of three items remain undetermined; two items are missing. Eight items are separately marked as possible contact forms. Under the adopted primary classification, event- and state-based reference is more frequent for morning, whereas reference to the sun and intraday temporal structure predominates for noon and afternoon. The three branches show a similar distributional direction. Midday positioning, half-day segmentation, and day/noon-boundary relations account for 93 items (46.0% of classifiable items). These patterns suggest that daily events and morning-stage meanings play a greater role at the beginning of daytime, while relations to the center of the day more often organize noon and afternoon expressions. This reflects a division of roles between event-based reference and relational positioning in daytime word formation.

| KEYWORDS

Kra-Dai languages; daytime terms; reference-based formation; word-formation types; Chinese contact

| ARTICLE INFORMATION

ACCEPTED: 08 November 2026 **PUBLISHED:** 16 November 2026 **DOI:** 10.32996/ijllt.2026.9.11.28

1. Introduction and Related Research

Daytime terms may be motivated by the sun's position and relations to midday, or by such cues as mealtimes, work, cockcrow, and changes in light and temperature. Research on the relationship between spatial and temporal expressions (Haspelmath, 1997, pp. 1–3; Núñez & Cooperrider, 2013, pp. 220–221), together with studies of temporal metaphor, sequential relations, and their cognitive foundations in Chinese (Cai, 2012; Chen & Huang, 2006, pp. 604–607; Dong, 2004), provides a theoretical background for examining these naming strategies. Standardized elicitation items facilitate comparison across survey sites (L. Wang, 2024, pp. 43–44), but the composition of the sample and the boundaries of the concepts being compared must be made explicit.

Descriptions of the distribution, classification, and structure of Kra-Dai languages by Wang Jun, Liang Min, Zhang Junru, and other scholars (Liang & Zhang, 1996; J. Wang, 1984), and research on Zhuang dialects by Zhang Junru, Liang Min, Ouyang Jueya, and colleagues (Zhang et al., 1999), provide a foundation for grouping the languages by branch and comparing their word forms. Building on this work, the reference sources used in daytime terms and their distribution within the branches warrant further comparison.

Lexical typology examines relationships between word forms and meanings across languages expressing comparable concepts (Koptjevskaja-Tamm, 2008, pp. 4–6; Zhao & Yu, 2024, pp. 15–16). Zhao Xinyu and Yu Xiujin compare daytime terms in 52 modern languages, draw on Old Chinese data to identify eight word-formation strategies, and discuss the organizing role of 'noon' (Zhao & Yu, 2024, pp. 15–18, 22). Sun Yingjie and Ma Qingyue's comparison of the forms and distribution of day-denoting deictic terms also offers a point of reference for cross-linguistic analysis of time-of-day terms (Sun & Ma, 2025). Other studies explain intraday time expressions in terms of spatial relations (Bender & Beller, 2014, Introduction; Haspelmath, 1997, pp. 1–3, 21–22), natural and social events (Góral & Guerra de La Torre, 2024, Sections 3–4, Table 1; Silva Sinha, 2019, pp. 2, 7–9), and the sun's position (Levinson & Majid, 2013, pp. 4–5). Drawing on data from 69 Kra-Dai survey sites, this study compares reference choices for morning with those for noon and afternoon, examines differences among branches, and investigates how relations to the center of the day and everyday events jointly contribute to time-of-day word formation.

2. Data Sources and Classification Criteria

The dataset was compiled from records on the Chinese Language Resources Protection Project recording and display platform. Languages are grouped into branches with reference to the relevant literature (Diller, 2008, pp. 5–7; Kosaka et al., 1998; Liang & Zhang, 1996; J. Wang, 1984; Wei & Qin, 2006; Zhang, 1990; Zhang et al., 1999; Zhou & Luo, 2001); the survey sites are listed in Supplementary Material S1. Recent lexical database projects emphasize the standardization of language identification, concepts, and transcription (Blum et al., 2025, pp. 1, 3–4), and improve cross-linguistic comparability through refinements in sampling and data presentation (Tjuka et al., 2025, pp. 1, 4–6). The dataset covers all 69 survey sites recorded on the platform that fall within the Kra-Dai scope adopted in this study (Chinese Language Resources Protection Project, n.d.). Three standardized prompts are examined at each site. The analysis concerns the word-formation motivations of the corresponding forms; Mandarin meanings are not used to infer the temporal boundaries of the categories in the languages concerned.

2.1 Sample and Classification Criteria

Of the 69 survey sites, 41 belong to the Tai branch (59.4%), 17 to Kam-Sui (24.6%), and 11 to Kra (15.9%). The dataset contains 207 items, of which 205 have recorded forms and two are missing. Because the numbers of sites differ across branches, both item counts and within-branch percentages are reported below. A survey site does not necessarily represent a distinct language.

Table 1. Distribution of Survey Sites by Branch

Branch	Number of survey sites	Percentage
Tai	41	59.4%
Kam-Sui	17	24.6%
Kra	11	15.9%
Total	69	100.0%

'Morning', 'noon', and 'afternoon' are prompts in the project's elicitation list and provide the basis for assembling corresponding forms from the survey sites. These prompts offer a common basis for cross-site comparison, while the actual temporal ranges of the corresponding words must be understood in context. The platform entry for 'noon' at Xinbao, Yunnan, is recorded as 'no noon'; it is therefore treated here as a missing item.

The counting unit is the survey site–prompt pair. Each item is counted once under its primary classification, with the principal analysis supported by its form, gloss, and related expressions from the same site. Distinct word forms are treated as alternative forms, whereas different analyses of one form are treated as alternative interpretations. Other interpretations and their effects on the counts are presented together in S2 and S7. The broad reference class and the specific type are recorded separately; missing items receive no type assignment, and contact forms are marked independently. All quantitative comparisons and distributional claims below follow this primary-classification convention.

Chinese equivalents, elicitation procedures, and generalized definitions in a standardized wordlist can affect correspondences across the dataset. Comparative wordlist research likewise shows that a single concept may be translated by different forms (Snee et al., 2026, Sections 3.2.2, 4.1.1, and 4.2). On the basis of the platform transcriptions and prompt meanings, the analysis combines basic vocabulary, related expressions, and lexical glosses from the same survey site. Phonetic similarity, homophony, and whole-word translations serve only as leads for checking the analysis; unidentified internal constituents are marked 'unresolved'. The study offers a synchronic account of word formation. Precise temporal boundaries, everyday frequencies of use, and historical origins require further contextual investigation and historical evidence.

3. Classification of Reference Sources

The broad classification is based on the principal referential basis and distinguishes reference to the sun and intraday temporal structure (class C) from reference to events and states (class E). Class C locates a period through the sun's appearance or position, the division of daylight as a whole, or a day/noon boundary and relations to it. Class E locates a period through meals and work, cockcrow and dawn, early or late stages, and perceptual states. Class C encompasses both celestial position and temporal structure: C1 and C2 mainly draw on sunrise, midday, and the sun's position; C3 draws on the duration and division of daylight; and C4 takes a day/noon boundary as its relational center. 'Day' in 'half-day' denotes a divisible duration of daylight, while 'noon' denotes an intraday point or period. Neither can simply be equated with the sun as a celestial body. The meaning of a constituent must be assessed from its form and gloss, rather than assumed to be identical merely because Chinese glosses use the same character ri 'sun/day'.

In terms of word-formation motivation, the data display three broad strategies: using the sun's position, the state of the sky, and changes in light to denote a period; using activities or events such as meals, work, and cockcrow; and locating a period through

half-day divisions, midday, and relations such as before/after or above/below (Zhao & Yu, 2024, pp. 20–22; Zhong & Liu, 2022, pp. 1, 4–5). More than one strategy may be combined in a single form.

Mnemonic codes facilitate comparison between the examples and the statistical results. C derives from cycle (the daily cycle) and marks reference to the sun and intraday temporal structure; E derives from event and experience and marks reference to events and states. The numbers identify types within each group and imply neither historical succession nor evolutionary rank.

Table 2. Criteria for the Seven Types of Reference-Based Word Formation in Daytime Terms

Code	Type	Definition	Main criteria
C1	Sunrise-based	Uses the beginning of the day, sunrise, the sun's initial phase, or the emergence of daylight as a boundary marking the morning or early part of the day.	The form or meaning directly includes elements such as “day beginning,” “sunrise,” or “daylight becoming.”
C2	Midday positioning	Locates noon and related daytime stages by the sun's central or overhead position, expressions such as ‘top + sun’ or ‘head + sun’, or an explicit midpoint of daylight.	The meaning depends on a central position, as in “middle + day,” “middle + sky,” “top + sun,” or “head + sun.” Possible contact forms with a “middle + noon” structure in the noon items are also assigned here on the basis of their temporal relation.
C3	Half-day segmentation	Uses “half day/half daytime,” denoting a duration of daylight, as an intraday segment, a midpoint, or the term for noon itself to express a daytime period.	Examples include “upper half day,” “lower half day,” “half day before,” “half day after,” “half day before,” and “half day”; “half day/half daytime” is an essential word-formation component.
C4	Day/noon-boundary relations	Uses temporal boundaries such as day, noon, middle day, or the middle of daytime as reference points and locates morning or afternoon through relations such as upper, lower, before, after, earlier, preceding, following, or past.	Examples include “upper + noon,” “lower + noon,” “before noon,” “noon before,” “middle of daytime after,” “day before/day after,” and “past noon.” Forms containing “half day/half daytime” are assigned to C3.
E1	Meal/work activities	Uses meal names, eating/cooking, work, or relations preceding or following these activities as reference bases; synchronic associations supported by meal series at the same site may be analyzed conditionally.	Examples include “prepare breakfast,” “eat lunch,” “lunch + before,” and “lunch + after.”
E2	Cockcrow/dawn events	Defines time periods through event cues such as cockcrow, “sky crowing,” relations before or after crowing, or daybreak.	The primary reference is to the occurrence of an event and need not depend on solar position.
E3	Time-of-day stages and perceptual states	Defines time periods through stage meanings such as early and late, or perceptual states such as brightness, darkness, cold, and heat.	Early and late are first analyzed as stage meanings and are not automatically equated with brightness or darkness; bodily or visual interpretations require additional lexical support.

Note. C derives from cycle (the daily cycle) and marks reference to the sun and intraday temporal structure; E derives from event and experience and marks reference to events and states. C1–C4 and E1–E3 identify the seven types. The numbers indicate only their positions within each group, not historical sequence or rank. The classification distinguishes the referential bases selected in word formation; it does not presuppose a historical chain from “sun” to “daylight” to “time of day” in the languages concerned. Forms containing constituents similar to Chinese wu “noon” are separately marked as possible contact forms and do not constitute additional types alongside the seven word-formation types.

Table 2 sets out the criteria for the seven types: C1 refers to the beginning of daylight; C2 to midday or the sun's central/high position; C3 to a half-day basis; and C4 to relations to a day/noon boundary. E1 refers to meals and related activities; E2 to cockcrow, dawn, and relations before or after such events; and E3 to early or late stages or perceptual states involving light and temperature. The reference classes of the morning items from Jizhao, Guangdong, and Nayong, Guizhou, remain undetermined. The noon item from Xingye, Guangxi, belongs to the class of reference to the sun and intraday temporal structure, but its specific word-formation type remains undetermined.

4. Reference to the Sun and Intraday Temporal Structure: From Sunrise to the Center of the Day

4.1 C1: Sunrise-Based Reference

Sunrise-based reference takes the beginning of daylight as a temporal boundary. The form or gloss must explicitly indicate the beginning of the day, sunrise, the initial stage of the sun's daily course, or the emergence of daylight. A morning term denoting only 'breakfast', 'early morning', or 'cockcrow', without reference to sunrise or the beginning of the day, is not assigned to this type.

Table 3. Examples of Sunrise-Based Reference

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Jinping, Guizhou / Dong	Morning	ʈ̥ot^{42} pən^{22} ʈ̥hi^{13} end/boundary day beginning	end day beginning	"Day beginning" directly marks the early part of daylight.
Tianzhu, Guizhou / Dong	Morning	ʈ̥ot^{31}pən^{35} təu^{22} day beginning	day beginning	The term directly refers to the beginning of the sun's course.
Xinhuang, Hunan / Dong	Morning	ʈ̥yɛ^{31} wən^{55} təu^{214} time day beginning	time day beginning	Formed from "time + day beginning."
Guanzhai, Guizhou / Gelao	Morning	dʑi^{31}nɯ^{31} (sun) rise up	(sun) rise up	The meaning refers directly to sunrise.
Guanyinshan, Hunan / Northern Zhuang	Morning	kja:ŋ^{31} ŋwo:n^{31} tɕhiŋ^{231} time day (daytime) become	time day (daylight) become	Uses the emergence of daylight/the beginning of the day as a boundary.

Note. Phonetic transcriptions omit square brackets while retaining the original IPA characters and superscript tone values. The line beneath each transcription gives aligned glosses for identifiable words or word-formation constituents; the example tables also provide whole-expression meanings. Forms with unclear internal structure are retained as whole words or marked "unresolved". The glosses represent the analysis adopted in this study; the evidence and alternative interpretations are provided in S2 and S7. Morn. = morning; Aft. = afternoon.

The five C1 records in Table 3 all identify the beginning of daylight through constituents glossed as 'day beginning', 'sunrise upper', or 'daylight become'. The sun's rising and the transition from darkness to light are widely observable changes at the boundary between night and day, making them suitable landmarks for the early part of daylight. Silva Sinha's work on event-based time shows that changes in the natural environment and celestial activity can locate time intervals (Silva Sinha, 2019, pp. 2, 7–9); Levinson and Majid's data likewise show that the sun's position can participate in intraday time reference (Levinson & Majid, 2013, pp. 4–5). These forms condense a perceptible transition between night and day into a word-internal landmark, making the beginning of daylight a direct means of identifying morning.

4.2 C2: Midday Positioning

Midday positioning names noon and related daylight stages through the sun's central, high, overhead, or peak position, or through an explicit midday boundary. Forms such as 'head/top + sun' are motivated by solar position, whereas 'middle + noon' is motivated by the center of the day. Both foreground midday positioning; this does not make 'noon' itself a celestial body.

Table 4. Examples of Midday Positioning

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Jinping, Guizhou / Dong	Noon	kau^{34} pən^{22} head (top) sun	head (top) + sun	Named with reference to the sun's overhead/central position.
Tianzhu, Guizhou / Dong	Noon	kau^{33} wən^{35} head (top) sun	head (top) + sun	Uses the sun's high point at midday as the central boundary.

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Xinhuang, Hunan / Dong	Noon	tja^{53} wən^{55} middle day	middle day	Noon is directly marked by the middle of the day.
Muma, Guangxi / Northern Zhuang	Noon	pjoːŋ^{33} ŋwan^{31} middle day (daytime)	middle day (daytime)	Identifies noon through the middle of the day/sky.
Manghe, Yunnan / Dai	Afternoon—noon	kaŋ^{33} van^{55} middle day	middle day (corresponding to afternoon and noon)	The same midday form occurs in the expressions for both afternoon and noon.

The forms glossed as 'head/top + sun', 'middle + sun', and 'middle + sun/day' in Table 4 all use the sun's position to identify a period. In everyday observation, the sun appears to move from a lower to a higher position and then back to a lower position during daylight. Its approach to its highest daily position can thus be understood as the middle of daylight. 'Head' and 'top' emphasize spatial height, while 'middle' emphasizes centrality. Applied to the sun, these spatial meanings turn a visible celestial position into a basis for recognizing noon. Bender and Beller argue that spatial reference relations can structure temporal expressions (Bender & Beller, 2014, Introduction); Silva Sinha, Levinson, and Majid also show that solar position and movement can provide intraday temporal reference (Levinson & Majid, 2013, pp. 4–5; Silva Sinha, 2019, pp. 7–9, 18). At Manghe, Yunnan, the same form kaŋ^{33}van^{55} is recorded under both the noon and afternoon prompts. A midday-based name can therefore also apply to a neighboring daylight stage. Midday serves both as a named period and as a reference for adjacent periods.

4.3 C3: Half-Day Segmentation

'Day' in 'half-day' denotes the duration of daylight rather than the sun as a celestial body. Half-day segmentation uses 'half-day' as the midpoint of daylight, a unit of intraday division, or the noon term itself to construct daytime meanings. This type includes both 'half-day = noon' and relational expressions such as 'upper half-day/lower half-day' and 'half-day + before/half-day + after'. An item is preferentially assigned to C3 whenever 'half-day' is an indispensable word-formation basis for its temporal meaning. If the noon term at the same site is 'middle + sun/day', 'day + middle', or 'top + sun/day', however, it remains C2; it is not reassigned to C3 merely because morning and afternoon expressions at that site use half-day forms.

Table 5. Examples of Half-Day Segmentation

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Chadong, Guangxi / Chadong	Morning	ɕiːŋ^{35} puːn^{35} wan^{53} upper half day	upper half day	Locates morning as the "upper half day," with "half day" as an essential base.
Chadong, Guangxi / Chadong	Afternoon	ha^{35} puːn^{35} wan^{53} lower half day	lower half day	Locates afternoon as the "lower half day," with "half day" as an essential base.
Yingdong, Guangxi / Sui	Morning	paːn^{35} wan^{21} ʔjət^{55} half day before	half day before	"Half day + before" denotes morning; classified as C3.
Yingdong, Guangxi / Sui	Afternoon	paːn^{35} wan^{31} lən^{42} half day after	half day after	"Half day + after" denotes afternoon; classified as C3.
Yingdong, Guangxi / Sui	Noon	paːn^{35} wan^{31} half day	half day	"Half day" directly names noon; classified as C3.
Jinxiu, Guangxi / Lakkia	Morning	paːn^{55} wan^{231} baːŋ^{51} half day before	half day before	"Half day + earlier" denotes morning; classified as C3.
Jinxiu, Guangxi / Lakkia	Afternoon	paːn^{55} wan^{231} ɬa^{24} half day after	half day after	"Half day + after" denotes afternoon; classified as C3.

Table 5 presents individual records illustrating half-day segmentation. 'Half-day' first treats daylight as a divisible whole and then uses 'half' to mark a division or midpoint. Constituents meaning 'upper', 'lower', 'before', or 'after' locate the target period relative to that division. Accordingly, 'half-day' may directly denote noon or form morning and afternoon expressions such as 'upper half-day', 'half-day + before', and 'half-day + after'. Haspelmath and Bender and Beller show that spatial orientation and sequential relations frequently organize temporal meaning (Bender & Beller, 2014, Introduction; Haspelmath, 1997, pp. 21–22, 56–57). In the present data, 'half' foregrounds the relationship between daylight as a whole and its earlier and later portions, allowing a name for the whole to organize several periods. The defining requirement for C3 is a 'half-day' word-formation basis. This distinguishes it from C4, which centers on a day or noon boundary.

4.4 C4: Day/Noon-Boundary Relations

In this type, 'day' and 'noon' function as temporal boundaries, while 'before', 'after', 'upper', and 'lower' express relations between periods. A day/noon-boundary expression takes an intraday landmark—'day', 'noon', 'middle of the day', or 'day's center'—as its reference center and denotes morning or afternoon through relational constituents such as 'upper', 'lower', 'before', 'after', or 'past'. When the basis is 'half-day', C3 takes priority. A form expressing only a central position, such as 'middle + sun/day', 'day + middle', 'head + sun/day', or 'top + sun/day', without a relational constituent, belongs to C2. If the basis is an everyday activity such as lunch, eating, or cooking, it belongs to E1.

Table 6. Examples of Day/Noon-Boundary Relations

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Shidong, Guangdong / Biao	Morning	poŋ^{21} hɐt^{5} before noon	before noon	Uses noon as the boundary and locates morning before it.
Longtang, Hainan / Be	Morning	ɗa^{24} ɓɐk^{21} middle (noon) before/earlier than	middle (noon) earlier/before	Uses noon as the boundary to locate morning.
Longtang, Hainan / Be	Afternoon	ɗan^{24} ɗa^{24} zui^{21} day/sky middle after	middle of daytime after	Uses the middle of daytime as the boundary to locate afternoon.
Longcheng, Hunan / Dong	Morning	ʈot^{31}man^{55} un^{53} day before	day before	Uses day as the boundary to locate morning.
Longcheng, Hunan / Dong	Afternoon	ʈot^{31}man^{55} lən^{11} day after	day after	Uses day as the boundary to locate afternoon.
Ding'an, Guangxi / Northern Zhuang	Afternoon	kwa^{31} liŋ^{35} pass Noon	past noon	Uses noon as the boundary to locate afternoon.
Xingye, Guangxi / Zhuang (Hongshuihe variety of Northern Zhuang)	Morning—afternoon	Morn. kən^{31} keŋ^{45} ŋon^{31} upper unresolved day/sky Aft. lɒ^{23} keŋ^{45} ŋon^{31} lower unresolved day/sky	Morning: upper relation + a base containing a day element; afternoon: lower relation + a base containing a day element	"Upper/lower" combines with a base containing a day element, supporting a C4 classification; the intervening element keŋ remains unresolved.

In Table 6, 'before + noon' and 'middle/noon + before' place the target period before noon, while 'day's center + after', 'day + after', and 'past + noon' place it after an intraday boundary. Such forms first select day, noon, or the center of the day as a reference point and then arrange periods through before/after, earlier/later, or above/below relations. In 'upper + noon' and 'lower + noon', 'upper' and 'lower' express relations to the center of the day, rather than the sun's actual vertical direction. The use of spatial relations to express temporal sequence is widespread cross-linguistically (Bender & Beller, 2014, Introduction; Haspelmath, 1997, pp. 56–57), although languages differ in their choice of directional words. At Longcheng, Hunan, the noon term 'half/middle + day' has a half-day basis and belongs to C3, whereas 'day + before' and 'day + after' at the same site take

day as a boundary and belong to C4. The distinction is thus determined by the word-formation basis, not by the Chinese prompt itself.

4.5 Forms Containing Constituents Similar to Chinese wǔ 'Noon'

Eight items are separately marked as possible contact forms: three each from Daxin and Geyang in Guangxi, and two from Jizhao in Guangdong. This annotation concerns the relevant phonetic constituents and is independent of primary-type counting. In the principal analysis, the noon items at all three sites belong to C2, and the corresponding morning and afternoon forms to C4. These eight annotations do not add items to the dataset total.

Table 7. Forms Containing Constituents Similar to Chinese wǔ 'Noon'

Survey site / language	Prompt	Transcription and analytical gloss			Meaning	Word-formation analysis
Daxin, Guangxi / Mulao	Morning—noon—afternoon	Morn.	saːŋ^{121} upper	ʔu^{53} noon	Morning: morning; noon: noon; afternoon: afternoon	Morning and afternoon are classified as C4 and noon as C2. All three are also recorded as possible contact forms containing an element similar to Chinese wǔ "noon."
		Noon	tsuŋ^{44} middle	ʔu^{53} noon		
		Aft.	ja^{24} lower	ʔu^{53} noon		
Geyang, Guangxi / Northern Zhuang	Morning—noon—afternoon	Morn.	ɕaːŋ^{35} upper	wu^{55} noon	Morning: morning; noon: noon; afternoon: sun exposure + noon	Morning and afternoon are classified as C4 and noon as C2. The afternoon form receives a relational analysis on the basis of its correspondence within the series; its morpheme-by-morpheme interpretation remains undetermined. The three items are also marked as possible contact forms.
		Noon	ɕuŋ^{33} middle	wu^{55} noon		
		Aft.	ja^{35} sun exposure	wu^{55} noon		
Jizhao, Guangdong / Be	Noon	ka^{33}laŋ^{33} lunch association (internal structure unresolved)			lunch-related (internal structure unresolved) / noon	The structurally transparent "middle + noon" form provides the primary C2 analysis. The other form retains a meal-related interpretation (see S7). Although the platform lists the other form first, the primary analysis is selected according to the strength of the evidence. The contact flag applies to the form containing the noon element.
		／				
		tsuŋ^{21} middle	ŋo^{31} noon			
Jizhao, Guangdong / Be	Afternoon	kam^{33}ni^{33} night			night / afternoon	The primary analysis uses the "lower + noon" form, classified as C4. The "night" form retains a supplementary E3 analysis (see S7). The contact flag applies to the form containing the noon element.
		ha^{33} lower	ŋo^{31} noon			

The relevant forms from Daxin, Geyang, and Jizhao contain syllables resembling Chinese wǔ 'noon', and correspondences within their lexical series provide contact clues. Geyang afternoon is assigned to C4 on the basis of the relational series, although the morpheme-level interpretation of its first constituent remains unresolved. For Jizhao afternoon, the alternative form 'lower +

noon' is adopted for the principal analysis and assigned to C4; the 'night' form and its E3 interpretation are presented in S7. The noon item is primarily analyzed through 'middle + noon', while a meal-related interpretation is retained for the other form.

5. Reference to Events and States: Events, Activities, and Bodily Experience

5.1 E1: Meal/Work Activities

The meal/work activities type takes food, eating, cooking, work, or relations before or after these activities as its reference. Complete expressions for eating or cooking directly provide an event basis. Forms sharing constituents with a series of meal names at the same site establish a meal association through correspondences across that series. These two kinds of evidence are distinguished in the examples and supplementary materials.

Table 8. Examples of Reference to Meal/Work Activities

Survey site / language	Prompt	Transcription and analytical gloss			Meaning	Word-formation analysis
Wantanhe, Guizhou / Bouyei	Morning—noon—afternoon	Morn.	tsɯ^{11} prepare	ŋa:i^{213} breakfast	Morning: prepare breakfast; noon: prepare lunch; afternoon: prepare dinner	All three prompts are represented through cooking activities.
		Noon	tsɯ^{11} prepare	ziəŋ^{213} lunch		
		Aft.	tsɯ^{11} prepare	tɕau^{213} dinner		
Tiechang Pulong, Yunnan / Buyang	Morning—noon—afternoon	Morn.	ka^{35} eat	mi^{31} breakfast	Morning: eat breakfast; noon: eat lunch; afternoon: eat dinner	Meal-eating events divide the day into periods.
		Noon	ka^{35} eat	lu^{33} lunch		
		Aft.	ka^{55} eat	ʐəu^{35} dinner		
Simo, Guangxi / E	Morning—noon—afternoon	Morn.	hjet^{54} breakfast-related	ti^{55} unresolved	Morning: breakfast-related period; noon: noon/lunch; afternoon: lunch after	Morning receives a breakfast-related analysis and afternoon is interpreted as after lunch, both classified as E1. Noon is classified as C2 on the basis of its midday interpretation.
		Noon	khjoŋ^{51}ŋwan^{31} noon/lunch			
		Aft.	khjoŋ^{51}ŋwan^{31} lunch	pa^{35} after		
Muchang, Yunnan / Dai	Morning—noon—afternoon	Morn.	tsɤ^{44} time	ŋa:i^{44} before	Morning: time before/breakfast; noon: time quiet/lunch; afternoon: time after/dinner	The primary analysis adopts the breakfast—lunch—dinner series and assigns all three items to E1. Alternative glosses are before, quiet, and after.
		Noon	tsɤ^{44} time	jin^{35} quiet		
		Aft.	tsɤ^{44} time	phau^{44} after		

Survey site / language	Prompt	Transcription and analytical gloss			Meaning	Word-formation analysis
Zhenfeng, Guizhou / Gelao	Morning—noon	Morn.	li^{42}	ɕuŋ^{42}	Morning: breakfast-related period (conditional analysis); noon: time element + lunch-related element	Morning corresponds to the breakfast series, and noon to the lunch and eat-lunch series, supporting E1. Unidentified elements remain unresolved.
			unresolved	breakfast-related component		
		Noon	tɕi^{31}	ki^{42}		
			time	lunch-related component		
Nayong, Guizhou / Bouyei	Noon—afternoon	Noon	tsɯ^{31}	ŋaːi^{31}	Noon: time element + breakfast-related element; afternoon: time element + lunch-related element	A time element combines with breakfast- and lunch-related elements; correspondence with the series at the same site supports E1.
			time	breakfast-related component		
		Aft.	tsɯ^{31}	zɯŋ^{31}		
			time	lunch-related component		
Miaocao, Guizhou / Sui	Noon	ʔdjak^{55}	tsjə^{11}	au^{53}ʈhət^{55}	unresolved element + eat breakfast	This table presents a meal-related interpretation as a supplementary E1 analysis. The item is counted under C2 in the main statistics; see S7 for the alternative analyses.
		unresolved	eat	breakfast		

The cooking series from Wantanhe, Guizhou, and the eating series from Tiechang Pulong, Yunnan, in Table 8 show that everyday food-related activities can motivate time-of-day terms. The contiguity between an event and its time interval offers an explanation for such expressions (Silva Sinha, 2019, pp. 2, 7–9; Zhong & Liu, 2022, pp. 4–5, 12). The Simo morning term is analyzed through its association with the breakfast series, and the afternoon term as 'after lunch'; both belong to E1. Its noon item is interpreted as midday and assigned to C2. Muchang is primarily assigned to E1 on the basis of its meal series; the alternative reading 'before, quiet, after' is given in the supplementary materials. At Zhenfeng and Nayong, meal associations are supported by meal names and eating expressions from the same sites. An alternative meal-related interpretation of Miaocao noon appears in S7, while the item is counted under C2 in the primary statistics.

5.2 E2: Cockcrow/Dawn Events

The cockcrow/dawn events type uses perceptible early-morning events as temporal landmarks, including cockcrow, 'sky crowing', relations before or after crowing, and the onset of daylight. The key is not the sun's position in the sky, but the event's role as a cue within a shared daily routine.

Table 9. Examples of Reference to Cockcrow/Dawn Events

Survey site / language	Prompt	Transcription and analytical gloss		Meaning	Word-formation analysis
Chengguan, Guizhou / Bouyei	Morning	poŋ^{24}	hɑt^{35}	time cockcrow	Cockcrow serves as an event boundary for early morning.
		time	cockcrow		
Liangtian, Guizhou / Northern Zhuang	Morning	tɕe^{33}	hat^{35}	time cockcrow	Cockcrow serves as a temporal marker for the early part of the day.
		time	cockcrow		
Ecun, Yunnan / Buyang	Morning	hat^{55}	na^{24}	crowing before	Word formation uses temporal relations before or after the crowing event.
		crow	before		

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Miaocao, Guizhou / Sui	Morning	ʔbən[11] ʈ̚hət[55] day/sky crow	sky crowing	Combines a sky-related event with a crowing event.
Muma, Guangxi / Northern Zhuang	Morning	haːt[35] roːm[33] early (cockrow) early	early (cockrow) early	The meaning indicates a cockcrow/early-day event.

The forms 'cockcrow', 'sky crowing', and 'crowing before' in Table 9 use recurrent events to indicate early daylight. They constitute E2, with ten items, all under the morning prompt. Cockcrow is acoustically salient and readily noticed, and often accompanies early-morning activities such as getting up and cooking. It can therefore mark the earlier part of morning. 'Before crowing' additionally imposes a sequential relation on the event landmark. Silva Sinha's account of event-based time intervals shows that both natural events and social activities can provide temporal reference (Silva Sinha, 2019, pp. 2, 7–9). E2 and C1 can both refer to early daylight, but C1 directly invokes sunrise or the beginning of the day, whereas E2 invokes an audible or otherwise perceptible event.

5.3 E3: Time-of-Day Stages and Perceptual States

This type includes meanings such as 'early' and 'late' that identify intraday stages, as well as perceptual states involving light and temperature. Stage meanings locate a period within the course of the day; perceptual meanings refer to visible or otherwise experienced states. The analysis distinguishes them according to the particular constituents involved.

Table 10. Examples of Reference to Time-of-Day Stages and Perceptual States

Survey site / language	Prompt	Transcription and analytical gloss	Meaning	Word-formation analysis
Baima, Yunnan / Northern Zhuang	Morning—noon—afternoon	Morn. kaːŋ[22] ɣat[55] time early Noon pwaːŋ[21] van[53] half day Aft. ɣa[13] lap[55] unresolved darkness	Morning: time early; noon: half day; afternoon: unresolved element + darkness	Morning is primarily E3 and noon C3. Afternoon is primarily C2; the alternative E3 analysis supported by the darkness component is given in S7.
Dayao, Yunnan / Dai	Morning—noon—afternoon	Morn. liaʔ[44]tua~[44] bright/drill Noon kia[33] vaŋ[52] middle day (daytime) Aft. vaŋ[52]lɒ[21] late (daylight conditions; whole-form correspondence)	Morning: bright/drill; noon: middle day (daytime); afternoon: late (daylight conditions)	Morning is primarily E3; noon and afternoon are primarily C2. See S7 for an alternative E3 analysis of afternoon based on its late-stage interpretation.

Survey site / language	Prompt	Transcription and analytical gloss		Meaning	Word-formation analysis
Zhexiang, Guizhou / Bouyei	Morning—noon—afternoon	Morn.	la^{53} ŋa:i^{21} lower lunch	Morning: lower + lunch; noon: time lunch; afternoon: time hot (dry)	The afternoon expression "time hot (dry)" illustrates E3; the morning and noon forms are included for comparison.
		Noon	ɕɯ^{21} ŋa:i^{21} time lunch		
		Aft.	ɕɯ^{21} ziŋ^{21} time hot (dry)		
Dingqi, Guizhou / Gelao	Morning—noon—afternoon	Morn.	dəɯ^{33} daŋ^{13} moon (leisure) available time	Morning: moon (leisure) time; noon: cold + lunch-related element; afternoon: cold + unresolved element	Morning is E3 and noon E1; afternoon is primarily C2. See S7 for the alternative E3 analysis supported by the meaning cold.
		Noon	se^{13} nia^{33} cold lunch-related		
		Aft.	se^{13} dəɯ^{35} cold unresolved		
Zhenfeng, Guizhou / Gelao	Afternoon	pi^{45} kjaŋ^{42} unresolved late-stage-related component		Late-stage period; also linked to dinner (without an additional E1 count)	The late-stage element occurs in the series for evening, tonight, tomorrow night, and last night, supporting E3 as the primary analysis. Its occurrence in dinner alone does not establish E1.

Table 10 groups related forms by survey site to facilitate comparison between stage and perceptual meanings. The morning items from Baima, Dayao, and Dingqi, and the afternoon item from Zhenfeng illustrate primary E3 assignments. By contrast, the darkness constituent in Baima afternoon, the late-stage interpretation of Dayao afternoon, and the cold constituent in Dingqi afternoon show that perceptual analyses are also possible for these items. These last three items are counted as C2 in the primary statistics; their E3 interpretations are listed in S7 without being counted again in the primary classification. Changes in light (Silva Sinha, 2019, pp. 7–9) and temperature make the stages of daylight perceptibly distinct. In naming a period, a language may select such a state directly or summarize its stage through 'early' or 'late'.

6. Type Distribution, Word-Formation Motivation, and Chinese Contact

6.1 Type Distribution

Table 11 presents the broad reference classes across the three prompts. Of the 207 items, 99 refer to the sun and intraday temporal structure, 104 to events and states, two have an undetermined broad reference class, and two are missing. The three items with an undetermined specific word-formation type comprise the two with an undetermined broad class and Xingye noon, whose subtype within reference to the sun and intraday temporal structure is undetermined.

Table 11. Broad Reference Classes across the Three Prompts

Prompt	Class C	Class E	Broad reference class undetermined / missing record
Morning	17/69（24.6%）	49/69（71.0%）	2／1
Noon	42/69（60.9%）	26/69（37.7%）	0／1
Afternoon	40/69（58.0%）	29/69（42.0%）	0／0

Note. Class C denotes reference to the sun and intraday temporal structure, and class E denotes reference to events and states (also in Table 12). Each prompt uses 69 sites as its denominator. An undetermined broad reference class means that C or E cannot yet be assigned; a missing item means that no corresponding form is recorded.

Table 11 shows that reference to events and states accounts for 71.0% of morning items, exceeding the 24.6% referring to the sun and intraday temporal structure. For noon and afternoon, reference to the sun and intraday temporal structure accounts for 60.9% and 58.0%, respectively, in both cases exceeding the share accounted for by reference to events and states. Overall, morning terms more often draw on events, activities, and perceptual experience, while noon and afternoon terms more often draw on the sun, midday, and relations to intraday boundaries.

Table 12. Branch × Prompt × Broad Reference Class (Within-Branch Statistics)

Branch	Prompt	Class C	Class C proportion	Class E	Class E proportion	Broad reference class undetermined / missing
Tai	Morning	4/41	9.8%	34/41	82.9%	2／1
Tai	Noon	24/41	58.5%	16/41	39.0%	0／1
Tai	Afternoon	22/41	53.7%	19/41	46.3%	0／0
Kam-Sui	Morning	10/17	58.8%	7/17	41.2%	0／0
Kam-Sui	Noon	15/17	88.2%	2/17	11.8%	0／0
Kam-Sui	Afternoon	14/17	82.4%	3/17	17.6%	0／0
Kra	Morning	3/11	27.3%	8/11	72.7%	0／0
Kra	Noon	3/11	27.3%	8/11	72.7%	0／0
Kra	Afternoon	4/11	36.4%	7/11	63.6%	0／0

Note. Within-group percentages use the number of survey sites in the relevant branch as the denominator. The grouping and its basis are provided in Supplementary Material S1.

Table 12 shows that, in all three branches, the share of morning items referring to the sun and intraday temporal structure is no greater than the corresponding shares for noon and afternoon; in Kra, the morning and noon shares are equal. This common direction concerns relative differences between periods. Kam-Sui favors reference to the sun and intraday temporal structure in all three periods, whereas Kra favors reference to events and states throughout. Overall preferences therefore still differ across branches.

Morning is the beginning of daylight, yet names directly referring to sunrise do not constitute the majority. Table 13 distinguishes its reference pathways to compare the roles of the onset of daylight, everyday events, and midday relations in naming morning.

Table 13. Reference Pathways for Morning

Morning reference pathway	Count	Corresponding types	Typical expressions and explanation
Event-and-state reference pathway	49	E1, E2, E3	Meal associations, cockcrow and dawn events, morning stages, and perceptual states.
Direct sunrise reference pathway	5	C1	Day beginning, sunrise upper, daylight become.
Intraday-center relational pathway	12	C3, C4	Half-day and day/noon bases and their corresponding relations.
Specific type undetermined	2	Not assigned to a specific type	Morning at Jizhao, Guangdong, and morning at Nayong, Guizhou.
Missing record	1	Excluded from type classification	No corresponding morning form is recorded for Xiushuihe, Yunnan.
Total	69	—	Each survey site contributes one morning prompt item.

The 49 morning items referring to events and states comprise 15 E1, ten E2, and 24 E3 items. Only five C1 items directly refer to sunrise, while C3 and C4, which use relations to the center of the day, together account for 12 items. By comparison, Table 14 shows 41 C2–C4 items for noon and 40 for afternoon. Morning therefore not only favors reference to events and states; midday relations also play a smaller role in its naming. The beginning of daylight can be recognized through diverse cues, including

cockcrow, breakfast, and states characteristic of morning. Noon and afternoon are more often organized around the center of the day. This is the contrast revealed by examining morning separately.

Table 14. Distribution of the Seven Reference-Based Word-Formation Types across the Three Prompts

Type or counting category	Morning	Noon	Afternoon	Total
C1 Sunrise-based	5	0	0	5
C2 Midday positioning	0	34	19	53
C3 Half-day segmentation	3	7	5	15
C4 Day/noon-boundary relations	9	0	16	25
E1 Meal/work activities	15	23	17	55
E2 Cockcrow/dawn events	10	0	0	10
E3 Time-of-day stages and perceptual states	24	3	12	39
Total classifiable items	66	67	69	202
Specific type undetermined	2	1	0	3
Missing record	1	1	0	2
Grand total	69	69	69	207
Forms containing an element similar to “noon” (marked separately, without increasing the item count)	2	3	3	8

Note. The seven types account for 202 items; the specific types of three items remain undetermined, and two items are missing. Xingye noon is included in reference to the sun and intraday temporal structure in Tables 11 and 12, but its assignment within C1–C4 remains undetermined.

In Table 14, E1, C2, and E3 account for 27.2%, 26.2%, and 19.3% of classifiable items, respectively, totaling 72.8%. E1 is the largest individual type, whereas C2–C4 together account for 93 items (46.0%). Meal-related activities and relations to the center of the day are thus both important bases for word formation. Their differences lie chiefly in the periods to which they apply and the ways they organize expression, rather than in their overall frequencies alone.

6.2 Period-Specific Reference Choices and Word-Formation Motivation

E1 occurs across all three prompts and is most concentrated at noon. The cooking series from Wantanhe, Guizhou, the eating series from Tiechang Pulong, Yunnan, and the post-meal expressions from Simo, Guangxi, show that meals can supply an activity-based period and extend naming through sequential relations. A metonymic relation between an event and its interval of occurrence (Silva Sinha, 2019, pp. 2, 7–9; Zhong & Liu, 2022, pp. 4–5, 12) can explain this use. Meals recur daily and are organized into a series, providing an intraday temporal basis alongside celestial position.

C2 is concentrated at noon and in the afternoon. ‘Head/top + sun’ and ‘middle + sun’ use solar position to identify the middle of daylight (Bender & Beller, 2014, Introduction; Levinson & Majid, 2013, pp. 4–5). At Manghe, Yunnan, the same midday form is used for both noon and afternoon, showing that its semantic range can include adjacent stages. Midday is both a named period and a potential reference point for the afternoon, linking noon and afternoon more closely in word formation.

C3 and C4 further organize the center of the day into relational structures. ‘Upper half-day/lower half-day’ and ‘half-day + before/half-day + after’ divide a whole, whereas ‘before + noon’, ‘day's center + after’, and ‘day + before/day + after’ locate periods on either side of a boundary. Both types express time through spatial or sequential relations (Bender & Beller, 2014, Introduction; Haspelmath, 1997, pp. 21–22, 56–57), allowing a single referential basis to serve several periods. C4 is more frequent in the afternoon than in the morning, consistent with the greater reliance of afternoon naming on the center of the day.

C1 and E2 contain only five and ten items, respectively, but both are confined to morning. Day beginning and sunrise, on the one hand, and cockcrow and dawn, on the other, select different referents while pointing to readily noticeable changes from night to day. Although numerically small, these types have a clear period-specific distribution: morning can be named directly through the onset of daylight or an early-morning event.

E3 occurs mainly toward the beginning and end of daylight, with 24 morning, three noon, and 12 afternoon items. ‘Early’ and ‘late’ summarize a period's relative position in the day, while light and temperature provide specific perceptual cues. Morning is readily identified through states characteristic of morning and shared routines, whereas noon already has a concentration of midday and meal references and therefore makes less use of this type. Stage-based naming thus complements both midday relations and event-based naming.

Together, the seven types show that morning has relatively diverse naming cues, noon is more concentrated around solar position and meal activities, and afternoon relies more on midday and relations to what follows it. Spatial relations and event metonymy may also combine in forms such as 'after a meal', producing time-of-day expressions grounded jointly in natural processes and everyday activities.

6.3 Clues to Chinese Contact and Their Manifestations in Word Formation

The eight records in Table 7 and Supplementary Material S6 come from Daxin and Geyang in Guangxi and Jizhao in Guangdong. They form lexical series in which a shared final constituent related to 'noon' combines with preceding constituents that distinguish periods: 'upper/middle/lower + noon' at Daxin, 'different preceding constituents + noon' at Geyang, and 'middle + noon' and 'lower + noon' at Jizhao. Correspondences in the shared constituent, constituent order, and temporal meaning together provide evidence of a contact connection across an entire lexical series.

The three daytime terms in Daxin Mulao share ʔu^{53}, preceded by saːŋ^{121} 'upper', tsuŋ^{44} 'middle', and ja^{24} 'lower'. 'Middle + noon' foregrounds the center of the day, whereas 'upper/lower + noon' locates periods relative to that center; these correspond to C2 and C4, respectively. Citing research on Mulao, Graham Thurgood and Li Fengxiang note that adverbs of degree and quantity borrowed from Chinese generally combine according to the corresponding Chinese syntactic rules: lexical items may enter a recipient language together with associated combinatorial rules (Thurgood & Li, 2002, p. 162). This observation suggests that the contact analysis of Daxin should consider both word forms and their combinations. The systematic correspondences between these three forms and the related Chinese daytime terms in phonetic form, order, and meaning support the interpretation of Chinese daytime words and their combinatorial patterns as possible sources of influence.

The three Geyang forms share wu^{55}. Morning and noon are glossed as 'upper + noon' and 'middle + noon', respectively, while afternoon is glossed as 'sun exposure (sun) + noon'. The combination of a shared final constituent with distinct preceding constituents characterizes this series. In her study of Zhuang in Shizui Town, Guiping, He Haijuan presents heːn^{1} kua^{1} 'yellow + melon' and foŋ^{1} waːi^{2} 'mad + cattle'. 'Melon' in the former and 'mad' in the latter are borrowed from Chinese and combine with Zhuang constituents. She also contrasts the Guiping order 'cattle + rope' with 'rope + cattle' in Wuming and elsewhere, showing that contact can affect both the combination of word-formation constituents and their order (He, 2023, pp. 75–79). These examples provide a comparative basis for understanding combinations with the shared 'noon' constituent at Geyang. The central question is how distinct preceding constituents organize time-of-day expressions around this common reference constituent.

A borrowed lexical item that preserves its internal order can yield a different result from a borrowed constituent that participates in local word formation. Using 'cart' as an example, Zhang Junru and colleagues explain that older borrowed constituents may occur independently and form words such as 'ox cart' according to Zhuang word-formation patterns, whereas newer forms often enter as entire compounds. The book also records two expressions for 'third month', 'month + three' and 'three + month', that in some places tend to be used for the lunar and solar calendars, respectively. Temporal expressions may thus develop distinct forms and divisions of use under contact (Zhang et al., 1999, pp. 389, 392). In light of these mechanisms, the 'noon' series in Daxin and Geyang can be explained in terms of the borrowing of related daytime words and their combinatorial relations. The shared final constituent and corresponding order support a contact connection, without requiring every item to have entered through the same mechanism.

Jizhao Village is located in Tanba Town, Wuchuan City; Tanba and Wuyang are both towns within Wuchuan. The Wuchuan Gazetteer records the use of the Wuyang variety in Wuyang, Huangpo, Tangwei, Zhenwen, and other localities, and notes that younger Jizhao villagers at the time used Meilu or Wuyang in conversation (Wuchuan Municipal Gazetteer Compilation Committee, 2014, pp. 764, 766, 773, 805). On the basis of borrowed readings of several words with Middle Chinese fully voiced initials, Xue Caide and Shao Lanzhu further suggest that some loans in Jizhao Haihua may come from a Wuyang-type Yue variety (Xue & Shao, 2025, p. 87). Documented language-use connections and earlier comparative research together motivate the choice of Wuyang as a comparator. Table 15 presents the corresponding noon and afternoon forms.

Table 15. Comparison of Time-of-Day Expressions in Jizhao and Wuyang

Prompt meaning	Jizhao (platform data)		Wuyang (municipal gazetteer data)		Correspondence
Noon	tsuŋ^{21} middle	ŋo^{31} noon	tsoŋ^{55} middle	ŋɔu^{11} noon	Both are "middle + noon"; the corresponding syllables are similar, with different finals and tone values.
Afternoon	ha^{33} lower	ŋo^{31} noon	ha^{31} lower	ŋɔu^{11} noon	Both are "lower + noon"; the first elements have identical segments but different tone values.

Sources: Jizhao forms are given in Table 7; Wuyang forms are from the Wuchuan Gazetteer, p. 805. Wuyang also has a xià yàn 'afternoon' form; the table selects the expression containing wǔ 'noon'.

The correspondences in Table 15 and the contact background outlined above make it reasonable to infer that the two Jizhao expressions containing 'noon' have been influenced by local Yue in Wuchuan. Xue Caide and Shao Lanzhu also list tʃhan^{4} nam^{4} 'shower of rain', in which the constituent meaning 'spell/burst' is borrowed from Yue and nam^{4} is a native constituent meaning 'water' and 'rain'. They give two forms for 'cook rice', thɔŋ^{1} and ɓaːu^{1}, identifying the former as a native form and the latter as a borrowing of Yue bao 'cook in a pot' (Xue & Shao, 2025, pp. 89, 91). These examples show, respectively, that borrowed constituents can participate in local combinations and that loans can coexist with pre-existing expressions. In the present dataset, the Jizhao noon and afternoon entries also list a meal-related form and a 'night' form, respectively. Their coexistence with the 'noon' expressions shows that different naming motivations may be retained under a single prompt meaning.

Chinese contact may contribute to the formation of noon-centered time-of-day expressions through related lexical items and their combinatorial relations, alongside resources such as meals and time-of-day states. The eight items discussed here are marked as possible contact forms; this does not establish their borrowing dates or a unique mechanism for each item. Primary-type counts and contact annotations are treated separately.

7. Conclusion

This study compares 207 items elicited by three standardized prompts at 69 survey sites. Recorded forms are available for 205 items, and two are missing. Of the total, 202 items are assigned to the seven reference-based word-formation types C1–C4 and E1–E3; the specific types of three items remain undetermined. Broad reference classes and specific word-formation types are recorded separately. Eight possible contact forms are independently annotated without increasing the dataset total.

Under the primary-classification convention used here, 49 morning items refer to events and states (71.0%), exceeding the 17 referring to the sun and intraday temporal structure (24.6%). For noon, 42 items refer to the sun and intraday temporal structure (60.9%), exceeding the 26 referring to events and states (37.7%). For afternoon, the corresponding counts are 40 (58.0%) and 29 (42.0%). The pooled statistics for the 69 sites therefore show a predominance of event and state reference in morning terms, and of reference to the sun and intraday temporal structure in noon and afternoon terms. In all three branches, the share of morning items referring to the sun and intraday temporal structure is no greater than the shares for noon and afternoon, indicating a similar distributional direction. C2, C3, and C4 together account for 93 items, or 46.0% of classifiable material, showing a substantial concentration of word formation around relations to the center of the day.

This distribution indicates different emphases in naming the beginning of daylight, midday, and the afternoon. Morning terms more often select everyday cues such as cockcrow, meals, and states characteristic of morning, whereas noon and afternoon expressions are more often organized around the center of the day. E1, the largest individual type, occurs in all three periods, showing the role of meals in organizing everyday time. C2–C4 link periods through central position, division of a whole, and before/after relations. Events provide identifiable temporal content, while relational constituents enable that content to organize lexical series of time-of-day expressions. Together, they constitute the experiential basis of daytime vocabulary in Kra-Dai languages.

Statements and Declarations

Funding: No external funding is declared for this submission. The article processing charge will be paid by the author.

Conflicts of interest: The author declares no conflict of interest.

Data availability: The source records are publicly accessible through the Chinese Language Resources Protection Project platform. The complete dataset and classifications analyzed here are provided in Supplementary Materials S1–S7.

References

Bender, A., & Beller, S. (2014). Mapping spatial frames of reference onto time: A review of theoretical accounts and empirical findings. *Cognition, 132*(3), 342–382. https://doi.org/10.1016/j.cognition.2014.03.016

Blum, F., Barrientos, C., Englisch, J., Forkel, R., Greenhill, S. J., Rzymski, C., & List, J.-M. (2025). Lexibank 2: Pre-computed features for large-scale lexical data (Version 2). *Open Research Europe, 5*, Article 126. https://doi.org/10.12688/openreseurope.20216.2

Cai, S. (2012). Xiandai Hanyu "qian, hou" shijian zhixiang de renzhi shijiao, renzhi jizhi ji jufa yuyi xianzhi [Cognitive perspectives, cognitive mechanisms, and syntactic-semantic constraints on the temporal reference of qian and hou in Modern Chinese]. *Contemporary Linguistics*, (2), 129–144, 219–220.

Chen, Y., & Huang, X. (2006). Shijian yinyu yanjiu shuping [A review on time metaphor]. *Advances in Psychological Science, 14*(4), 604–609.

Chinese Language Resources Protection Project. (n.d.). *Recording and display platform* [Database]. Retrieved October 18, 2026, from https://www.zhongguoyuyan.cn/

Diller, A. V. N. (2008). Introduction. In A. V. N. Diller, J. A. Edmondson, & Y. Luo (Eds.), *The Tai-Kadai languages* (pp. 3–8). Routledge.

Dong, W. (2004). Hanyu shijian shunxu de renzhi jichu [The cognitive basis of temporal sequence in Chinese]. *Contemporary Linguistics*, (2), 110–115, 189.

Góral, M. S., & Guerra de La Torre, J. T. (2024). Event-based time in Polish culture and language. *International Journal of Language and Culture, 11*(2), 211–228. https://doi.org/10.1075/ijolc.00064.gor

Haspelmath, M. (1997). *From space to time: Temporal adverbials in the world's languages*. LINCOM Europa.

He, H. (2023). Yuyan jiechu dui Guiping Zhuangyu gouci de yingxiang [The influence of language contact on word formation in Guiping Zhuang]. *Journal of Baise University, 36*(1), 75–82. https://doi.org/10.16726/j.cnki.bsxb.2023.01.001

Koptjevskaja-Tamm, M. (2008). Approaching lexical typology. In M. Vanhove (Ed.), *From polysemy to semantic change: Towards a typology of lexical semantic associations* (pp. 3–52). John Benjamins. https://doi.org/10.1075/slcs.106.03kop

Kosaka, R., Zhou, G., & Li, J. (Eds.). (1998). *Geyang yuyan cihuiji [A wordlist of the Geyang languages]*. Guizhou Nationalities Publishing House.

Levinson, S. C., & Majid, A. (2013). The island of time: Yélî Dnye, the language of Rossel Island. *Frontiers in Psychology, 4*, Article 61. https://doi.org/10.3389/fpsyg.2013.00061

Liang, M., & Zhang, J. (1996). *Dongtai yuzu gailun [An introduction to the Kam-Tai languages]*. China Social Sciences Press.

Núñez, R., & Cooperrider, K. (2013). The tangle of space and time in human cognition. *Trends in Cognitive Sciences, 17*(5), 220–229. https://doi.org/10.1016/j.tics.2013.03.008

Silva Sinha, V. (2019). Event-based time in three Indigenous Amazonian and Xinguan cultures and languages. *Frontiers in Psychology, 10*, Article 454. https://doi.org/10.3389/fpsyg.2019.00454

Snee, D., Ciucci, L., & List, J.-M. (2026). Variation in language phylogenies may result from variation in concept translation. *Journal of Language Evolution, 11*, Article lzag005. https://doi.org/10.1093/jole/lzag005

Sun, Y., & Ma, Q. (2025). Riming zhishici xitong de kua yuyan renzhi jizhi yanjiu [A cross-linguistic study of the cognitive mechanisms of deictic day-name systems]. *Journal of Mudanjiang Normal University (Social Sciences Edition)*, (4), 44–51, 60. https://doi.org/10.13815/j.cnki.jmtc(pss).2025.04.012

Thurgood, G., & Li, F. (2002). Contact induced variation and syntactic change in the Tsat of Hainan. *Proceedings of the Annual Meeting of the Berkeley Linguistics Society, 28*(2), 149–164. https://doi.org/10.3765/bls.v28i2.1033

Tjuka, A., Forkel, R., Rzymski, C., & List, J.-M. (2025). Advancing the Database of Cross-Linguistic Colexifications with new workflows and data. In K. Evang, L. Kallmeyer, & S. Pogodalla (Eds.), *Proceedings of the 16th International Conference on Computational Semantics* (pp. 1–15). Association for Computational Linguistics. https://aclanthology.org/2025.iwcs-main.1/

Wang, J. (Ed.). (1984). *Zhuangdong yuzu yuyan jianzhi [Sketches of the Kra-Dai languages]*. Minzu Publishing House.

Wang, L. (2024). Da guimo tianye diaocha fangan sheji de linian ji sikao [The concept and thinking of the design of large-scale field investigation schemes]. *Essays on Linguistics*, (4), 42–49.

Wei, J., & Qin, X. (2006). *Zhuangyu tonglun [A general introduction to Zhuang]*. Minzu University of China Press.

Wuchuan Municipal Gazetteer Compilation Committee. (2014). *Wuchuan shizhi: 1979–2000 [Wuchuan municipal gazetteer: 1979–2000]*. Guangdong People's Publishing House.

Xue, C., & Shao, L. (2025). Jizhao Haihua guishu xinlun [A new discussion of the affiliation of Jizhao Haihua]. *Lexicographical Studies*, (3), 83–94, 106.

Zhang, J. (1990). Yaozu Lajiayu yu Zhuangdong yuzu yuyan de bijiao [A comparison of Lakkia spoken by the Yao with Kra-Dai languages]. *Minority Languages of China*, (6), 38–49.

Zhang, J., Liang, M., Ouyang, J., Zheng, Y., Li, X., & Xie, J. (1999). *Zhuangyu fangyan yanjiu [A study of Zhuang dialects]*. Sichuan Nationalities Publishing House.

Zhao, X., & Yu, X. (2024). Cihui leixingxue shijiao xia baizhou shiduan gouci qingxiangxing de renzhi yanjiu [A cognitive study of the tendency of daytime word-formation from the perspective of lexical typology]. *Journal of Foreign Languages, 47*(3), 15–26.

Zhong, L., & Liu, Z. (2022). Metonymic event-based time interval concepts in Mandarin Chinese—Evidence from time interval words. *Frontiers in Psychology, 13*, Article 896003. https://doi.org/10.3389/fpsyg.2022.896003

Zhou, Y., & Luo, M. (2001). *Daiyu fangyan yanjiu: Yuyin, cihui, wenzi [A study of Dai dialects: Phonology, vocabulary, and writing]*. Minzu Publishing House.