

FROM LEXICAL ACCESS TO HUMOR APPRECIATION: PROCESSING MORPHOPHONOLOGICAL JOKES IN THAI

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Abstract

Verbal humor requires readers to recover an intended interpretation from incongruity. However, different linguistic routes may pose different demands on processing and appreciation. While existing literature on verbal humor has focused primarily on nonliteral meaning, less attention has been placed on morphophonological jokes. This study examined humor processing and appreciation among Thai speakers by comparing four types of morphophonological jokes. Thirty native speakers of Thai completed two experiments between July and September 2025. The theoretical interpretation drew on Relevance Theory, the Graded Salience Hypothesis, and Benign Violation Theory, while the joke categories were operationalized using the adapted Dienhart's (1999) classification of linguistic triggers in punning riddles. Experiment 1 was a lexical decision task designed to establish a baseline for lexical access across morphological-semantic, morphological, semantic, phonological, and control conditions. Experiment 2 was a self-paced reading task using Thai riddles, followed by 10-point appreciation ratings. Reaction times at the critical and spillover regions were analyzed using mixed-effects regression models, whereas appreciation ratings were analyzed using cumulative link mixed models. The models included demographic, cognitive, psychological, and humor-style covariates, together with a participant-level morphological priming index derived from Experiment 1. The lexical decision results revealed facilitation for morphological and morpho-semantic relatedness, indicating sensitivity to lexical and morphological structure. However, in Experiment 2, this baseline priming index

did not reliably predict joke-processing reaction times or appreciation ratings. Appreciation ratings stressed a clearer pattern. Homonymy and paronymy were evaluated more favorably than haphony, while linguistic perspective contrasts suggested that same-form ambiguity and near-sound resemblance supported appreciation more effectively than polysemy or pseudomorphemic restructuring. By separating baseline lexical facilitation from online joke processing and final appreciation, the study provides experimental evidence that structural differences among Thai morphophonological jokes are more clearly reflected in evaluative judgments than in immediate reading-time costs, highlighting the recoverability of linguistic form as an important feature of humorous reinterpretation.

Keywords: humor processing; humor appreciation; Thai speakers; morphophonological jokes

Introduction

Humor comprehension embraces multiple interacting processes, including semantic interpretation, pragmatic inference, and affective evaluation. These processes must be proceeded under time constraints for humor to be successfully understood and appreciated (McGraw & Warren, 2010). In verbal humor, listeners must detect incongruity and subsequently reanalyze an initially possible interpretation in light of contextual cues (Attardo & Raskin, 1991). This dynamic process places cognitive demands on language users, as multiple competing interpretations may need to be activated, evaluated, and revised before the intended humorous meaning is achieved (Giora, 1997; 2011).

From a cognitive-pragmatic perspective, humor comprehension depends on the interaction between inferential processing and salience-driven activation. Under Relevance Theory (RvT; Sperber & Wilson, 1986; 1995), listeners infer communicative intentions by integrating linguistic input with contextual information. At the same time, the Graded Salience Hypothesis (Giora, 1997; 2011) predicts that multiple meanings of a lexical item may be initially activated, with more salient interpretations accessed earlier than less salient ones. Humor may arise when an initially salient interpretation is subsequently overridden by a less salient but contextually appropriate meaning, requiring reinterpretation.

A further issue concerns the linguistic characteristics of the humor under investigation. Much of the existing literature has focused on irony or broader forms of pragmatic and nonliteral language processing, whereas morphophonological humor has received comparatively less attention (Haimi & Pesonen, 2017; Zurlo & Ruggiero, 2021). This type of

verbal humor provides a useful route for examining how ambiguity is resolved through lexical and phonological structures (Dienhart, 1999). This issue is of particular linguistic interest in Thai, where morphophonological variation can play an important role in meaning construction.

In the present study, the term morphophonological jokes refers to riddle-based verbal humor in which humorous reinterpretation depends on a recoverable relationship between linguistic form and an alternative interpretation. The term is used broadly to accommodate four linguistic routes examined in the study: polysemy, in which one lexical form evokes related meanings; homonymy, in which the same form (either orthographically or phonologically) evokes unrelated meanings; paraphony, in which reinterpretation depends on near-sound resemblance; and hahaphony, in which humor involves playful pseudomorphemic segmentation or restructuring.

Semantic interpretation is therefore necessary for the comprehension of all four joke types; however, semantic content is not the primary basis of comparison in the present study. The analysis does not compare jokes according to their semantic topics or propositional content. Instead, it focuses on the linguistic route through which an alternative interpretation becomes recoverable, including lexical identity, semantic relatedness, phonological resemblance, and apparent morphological structure.

Thai provides particularly clear illustrations of these form-based relations. In the paraphonic example used in the present study, *láp* ‘sleep’ and *láp* ‘secret’ differ in tone but remain sufficiently similar in phonological form to support reinterpretation from the meaning prompted by the question to the intended answer. Hahaphony involves a more radical restructuring. In *ʔaː.lá.wáːt* ‘act madly’, the initial sequence *ʔaː* can be playfully interpreted as the independent kinship term *ʔaː* ‘aunt/uncle’, although it is not morphologically separable from the word in ordinary use. These examples illustrate how tonal contrast, syllabic form, and apparent morphemic boundaries can participate directly in Thai humorous reinterpretation.

The present study addressed this gap by examining morphophonological humor processing and appreciation among Thai speakers. It focused on both processing speed and humor appreciation ratings across different types of linguistic ambiguity. The aim was to determine whether observable differences were associated with joke type, demographic factors, or both. In doing so, the study sought to contribute to research on the linguistic characteristics of verbal humor by bringing Thai morphophonological humor into closer empirical discussion (Phakdeephasook, 2003; Bischetti et al., 2019).

Beyond its theoretical relevance, identifying linguistic structures that make humorous reinterpretation more recoverable may also offer practical implications for the construction and use of verbal humor. Joke writers, comedians, advertisers, and other communication professionals may benefit from preserving recognizable form-based cues while introducing incongruity, thereby allowing audiences to recover the intended alternative interpretation. These implications should nevertheless be considered provisional rather than prescriptive, as the present study examined a limited set of Thai riddle-based stimuli. The controlled experimental setting may also have elicited responses different from those arising when humor is exchanged spontaneously among interlocutors. Consequently, the present findings should not be generalized directly to naturally occurring humorous interaction.

Literature Review

Although humor has been examined from many perspectives, the present study focuses on theoretical accounts most relevant to verbal humor and its linguistic processing. The literature review begins with broad theories of verbal humor in order to explain how humor arises from incongruity, script opposition, and benign violation. It then turns to pragmatic and processing-oriented accounts, especially Relevance Theory (Sperber & Wilson, 1986) and the Graded Salience Hypothesis (Giora, 1997), which help explain how readers move from an initially available interpretation to a less expected but contextually appropriate one. The final part of the review focuses on morphophonological jokes, with particular attention to how lexical ambiguity, sound similarity, and pseudomorphemic restructuring provide different routes to humorous reinterpretation. These accounts allow Thai morphophonological jokes to be examined as structured linguistic phenomena, rather than as one broad category of verbal humor.

A central claim in linguistic approaches to verbal humor is that humor does not arise from ambiguity alone. A text becomes humorous when it allows two contrasting scripts or interpretations to be activated, and when the reader recognizes a shift from one interpretive frame to another (Raskin, 1985). This view was later developed into a broader account of verbal humor in which script opposition is only one part of the humorous mechanism. Verbal humor also depends on the linguistic resources that make the opposition available, including wording, narrative organization, and the placement of the humorous turn (Attardo & Raskin, 1991). For the present study, this framing is useful as it treats jokes as structured linguistic objects rather than as general humorous stimuli.

A related issue concerns why some incongruities become humorous whilst others do not. Incongruity is not always sufficient, for an unexpected or inappropriate element may simply be confusing, offensive, or meaningless. According to Tom Veatch (1998), humor is more likely to emerge when the violation remains acceptable, safe, or interpretable within the context. Benign Violation Theory (McGraw & Warren, 2010) further develops this idea by proposing that humor arises when something is perceived as a violation and, at the same time, as benign. Although this account has often been applied to social norms, taboo topics, or harmless transgressions, it is also useful for linguistic humor. A morphophonological joke may violate an expected lexical, phonological, or semantic pattern, but the violation remains benign when the reader can still recover the intended meaning. In this sense, the humorous effect depends not only on disruption, but also on recoverability.

From a pragmatic perspective, verbal humor also depends on the reader's ability to infer why an utterance is expressed in a particular way. Relevance Theory, hereafter RvT, treats utterance comprehension as an inferential process rather than a direct decoding of linguistic form. The hearer or reader integrates linguistic input with contextual assumptions in order to arrive at an optimally relevant interpretation (Sperber & Wilson, 1986; 1995). As per this view, the intended humorous meaning is often not the first interpretation that becomes available. Readers may initially be guided toward one interpretation before recognizing that another interpretation better explains the utterance. Humor therefore depends not only on what is said, but also on the reader's recovery of why it is said in that particular form (Yus, 2016).

A more processing-oriented account can be drawn from the Graded Salience Hypothesis. Meanings differ in salience, and more salient meanings are usually activated earlier than less salient alternatives, even when the less salient interpretation is ultimately more appropriate in context (Giora, 1997). This is relevant to verbal humor because many jokes require readers to move beyond an initially available interpretation and recover a less expected one. Since salient meanings are not easily suppressed, humorous reinterpretation may involve competition between an early activated meaning and a later contextually supported interpretation (Giora, 2003; 2011). Extended from this theoretical ground, morphophonological jokes also often depend on a shift from an expected lexical or phonological route to an alternative humorous reading.

With a morphophonological focus, riddle-based verbal humor can be understood through several linguistic triggers, including polysemy, homonymy, paraphony, and hahaphony

(Dienhart, 1999). These categories distinguish different ways in which a joke can guide the reader from an initially available interpretation to an alternative humorous reading.

Polysemy involves a single lexical form with multiple related meanings. In the present Thai materials, *tʰǎi* may mean ‘hold’ or ‘observe’, as in observing religious precepts; the riddle initially activates the physical meaning ‘hold’ before the answer redirects the reader toward the related conventional meaning ‘observe’. Homonymy involves identical or highly similar forms associated with unrelated meanings. For example, *hǎi* initially denotes the hearing organ ‘ear’, whereas the answer activates the unrelated exclamative use glossed as ‘Oh!’.

Paraphony depends on near-sound resemblance rather than complete form identity. The pair *láp* ‘sleep’ and *láp* ‘secret’, for example, differs phonologically in tone while remaining sufficiently similar to allow the intended expression to be recovered. Haphony involves a still less conventional relationship between form and meaning. In the present materials, *ʔa* ‘aunt/uncle’ is playfully treated as if it were an independent morpheme within *ʔa.lá.wá.t* ‘act madly’, although such segmentation is not licensed in ordinary morphology. The four categories therefore represent different linguistic routes by which an initially available interpretation can be displaced by a humorous alternative.

Thai provides a particularly useful context for examining form-based verbal humor. Previous research has demonstrated that Thai noun compounding can itself create structural ambiguity and provide a productive resource for humorous interpretation (Jaroenkiatboworn, 2007). More recent work on contemporary Thai entertainment has likewise identified wordplay, phonetic patterning, ambiguity, and sound distortion as recurrent strategies for constructing humor (Woraseeha, 2024). These observations complement earlier accounts of Thai riddling practices (Phakdeephasook, 2003) and demonstrate that Thai humor can exploit linguistic form at several levels. In particular, tonal contrasts, syllabic structure, lexical ambiguity, compound structure, and apparent morphemic boundaries may alter the relationship between a perceived form and its interpretation. Thai morphophonological jokes are therefore theoretically useful because they allow the interaction among lexical, phonological, morphological, and contextual cues to be examined within a single language.

Recent research has increasingly examined verbal humor through online and neurocognitive measures. Zheng and Wang (2022), using eye tracking with Chinese homophone puns, demonstrated that contextual support for a less salient homophone was associated with both online reading behavior and humor appreciation. Using related homophone-pun materials, the researchers further demonstrated an association between humor experience

and ongoing reading behavior, illustrating that processing and evaluative responses need not map onto one another straightforwardly. More recently, Li et al. (2025) provided ERP and oscillatory evidence that verbal-humor processing recruits greater attentional resources than non-humorous processing. Within Thai, Woraseeha (2024) also demonstrated the continuing importance of wordplay, phonetic patterning, ambiguity, and sound manipulation in contemporary humor. These studies point to growing interest in the interaction among linguistic form, online processing, and humor experience. However, comparatively little work has directly compared multiple morphophonological routes within Thai while linking a non-humorous lexical-access baseline to both online reading times and final appreciation.

The literature stresses that verbal humor should be examined at the level of linguistic structure. General theories of humor explain why incongruity, opposition, and benign violation are central to humorous effects. Pragmatic and processing-oriented accounts explain how readers move from an initially available interpretation to a less expected but contextually appropriate one. Morphophonological jokes introduce a further level of details by demonstrating that the route to reinterpretation may differ depending on whether the joke relies on polysemy, homonymy, paronymy, or haphonymy. The originality of the present study lies in bringing these distinctions into empirical discussion through Thai data. Rather than treating humor as a general pragmatic ability, the study examines how specific morphophonological structures shape both online processing and final appreciation.

The present study therefore investigates humor processing and appreciation among Thai speakers by comparing different types of morphophonological jokes. By combining a lexical-access task with a humor-processing task, the study distinguishes between general lexical facilitation and later humorous reinterpretation. In so doing, it contributes to linguistic research on verbal humor by illustrating how Thai morphophonological jokes can serve as evidence for the interaction between lexical structure, sound similarity, contextual inference, and humorous evaluation.

Methodology

Participants

The study included 30 native speakers of Thai (5 males and 25 females; $M_{\text{age}} = 26.73$ years, $SD = 8.25$). Eligibility required participants to be native Thai speakers, to report no visual or hearing impairment, substance abuse, neurological disorders, or mental health conditions, and to obtain a pre-recruitment GHQ score not exceeding 1. Note that GHQ was used as a

pre-recruitment screening measure rather than as an experimental outcome. As the study examined both reaction-time performance and affective evaluation of humor, elevated current psychological distress was treated as a potential source of unwanted participant-level variation in cognitive and evaluative performance. Accordingly, only candidates with GHQ scores not exceeding 1 were invited to participate in the experimental stage. The GHQ thus served to establish a relatively psychologically stable participant pool prior to testing, whereas the BDI-II, administered during the experimental session, was retained as a continuous covariate to account for residual individual variation in depressive symptoms.

Of the final sample, 23 participants held a bachelor's degree and seven had completed a graduate degree; 19 were students and 11 were employed. The study employed a within-participant repeated-measures design: each participant contributed 50 experimental lexical-decision trials in Experiment 1 and 20 experimental riddle trials in Experiment 2. This repeated-measures structure provided multiple within-participant observations for estimating condition effects, although it does not remove the limitations associated with a modest participant sample.

No *a priori* power analysis was conducted to determine the sample size. The sample size was determined by available eligible participant pool. The modest sample size is therefore acknowledged as a limitation, particularly for participant-level covariate estimates.

The gender distribution was unequal, with substantially fewer male than female participants. Biological sex was not a primary variable of theoretical interest and was included only as a covariate in the statistical models. Given the small number of male participants, the present data are not suitable for drawing conclusions about sex-related differences in humor processing or appreciation. The imbalance also limits the demographic representativeness of the sample and should be considered when generalizing the findings.

Instruments

Participants completed instruments assessing demographic, cognitive, and psychological characteristics. At recruitment, they completed a language and demographic background questionnaire covering age, biological sex, education, occupation, and language background. General mental well-being was assessed using the Thai version of the General Health Questionnaire (GHQ; Nilchaikovit et al., 1996). During data collection, attentional and executive control were examined via the Attention Network Test for Interaction (ANTI; Callejas et al., 2004), and working memory capacity was measured using the Corsi Block-Tapping Task (Corsi, 1972), both administered through online platforms. Participants also completed the

Humor Style Questionnaire (HSQ; Martin et al., 2003), using a Thai version translated by the researcher, and the Thai version of the Beck Depression Inventory-II (BDI-II; Thavichachart et al., 2009). These demographic, cognitive, and psychological measures were included as covariates in the statistical analyses where relevant.

Experiments

Two experimental tasks were designed to examine lexical access as a prerequisite for processing verbal humor involving morphophonological plays.

Experiment 1: Lexical Access

This lexical decision task, following the experiment of Chanchaochai (2019), was used to measure the participants' baseline lexical processing speed, included to account for individual differences in general language processing that may influence humor comprehension. The prime-target pairs were classified into five conditions according to the relationship between the root and the comparison item. The morphological-semantic (MS) condition contained the root form as a morphological constituent while retaining a semantically related interpretation. The morphological (M) condition shared the relevant morphological form with the root but did not preserve the same semantic relationship represented in the MS condition. The semantic (S) condition was semantically related to the root without sharing its relevant morphological form. The phonological (Ph) condition contained a phonologically similar form but lacked the intended morphological and semantic relationship to the root. Finally, the control (C) condition was selected to provide no intended morphological, semantic, or phonological relationship to the root. Table 1 illustrates these distinctions using the root *mĕ̌*: 'mother'. The task assessed whether different types of lexical relatedness facilitated access to the target word.

Table 1

Stimuli sample for experiment 1

	Root	MS	M	S	Ph	C
Thai	แม่	แม่เด็ก	แม่เหล็ก	มารดา	เกลือแร่	เทียนไข
IPA	<i>mĕ̌</i>	<i>mĕ̌. dĕk</i>	<i>mĕ̌. lĕk</i>	<i>maːn daː</i>	<i>klua rĕ̌</i>	<i>tʰian kʰǎj</i>
Meaning (whole)	'mother'	'mother' <	'magnet' <	'mother' (formal)	'mineral' <	'candle' <
Meaning (parts)		'mother' + 'child'	'mother' + 'iron'	NA	'salt' + 'mineral'	'candle' + 'fat'

In this experiment, each condition was observed 10 times. In addition, 200 filler items were included and distributed using a Latin square design. Participants were asked to decide whether each letter string formed an actual Thai word.

Experiment 2: Morphophonological Humor Processing

This self-paced reading task was designed to examine participants' reaction times at the point of disambiguation. It specifically examined whether resolving linguistic ambiguity requires additional processing time. The experimental materials comprised 20 Thai riddles, with five items representing each of four morphophonological categories: polysemy, homonymy, paraphony, and hahaphony. An additional 40 question-response fillers were included, producing 60 trials for each participant. The experimental riddles were constructed by the researcher based on the adapted classification of Dienhart's (1999). Note that an expert in experimental linguistics was invited to verify the items in terms of linguistic classification and experimental suitability of the stimuli. No separate formal cultural-validation or pretesting procedure was conducted to quantify comprehensibility, perceived naturalness, cultural appropriateness, or prior familiarity before the main experiment. Accordingly, possible variation in these characteristics across items is acknowledged as a limitation of the stimulus set.

Candidate items were retained when the question established an initially plausible interpretation and the response provided a recoverable alternative interpretation corresponding to one of the four predefined linguistic categories: polysemy, homonymy, paraphony, hahaphony.

(1) Polysemy

A: t^hǎ̌: ʔà.raj mâj pùat k^hě̌:n
 hold what NEG ache arm
 ‘What can one hold without getting arm pain?’

B: t^hǎ̌: sǎ̌:n pɛ̌:t
 observe precept eight
 ‘Observe the eight precepts.’

(2) Homonymy

A: hǎ̌: ʔà.raj t^ham pà:k kwâ:ŋ
 ear what make mouth wide
 ‘What kind of ear makes the mouth wide?’

B: hǎ̌: pʰɛːŋ tɕaŋ
 Oh! expensive INTENS
 ‘Oh! That’s very expensive.’

(3) Paraphony

A: láp ʔà.raj hǎ̌.m kʰon rúː
 sleep what forbid person know
 ‘What kind of sleep must not be known by others?’

B: láp (láp) sút jǔːt
 sleep (secret) extreme peak
 ‘Top secret.’

(4) Hahaphony

A: ʔaː ʔà.raj tɕhǎ̌ːp sǎ̌ŋ daŋ
 uncle what like sound loud
 ‘Which uncle likes to make loud noise?’

B: ʔaː.lá.wǎːt
 act madly
 ‘Act madly.’

The Thai word *tʰǎ̌:* as in (1) is played polysemously. That is, its meaning ‘to hold’ is activated first according to the context of the question and later its less salient definition ‘to observe certain rules’ is activated by the answer. In Thai, the definitions of *tʰǎ̌:* as in (1) are related to one another. Meanwhile in (2), a homophonous play of the word *hǎ̌:* is present. The context of the question guides the hearer to think of its meaning related to an organ. Later, the answer activates the less expected use of *hǎ̌:* as an exclamative expression in Thai. In this case, both of its meanings, an organ for hearing and an exclamative expression, are not related. They accidentally sound identically.

In (3), the modified sound of *láp* (secret) as *láp* (sleep) is used in the question to steer the reader's processing toward the meaning of the latter. However, the interpretation toward secret is more appropriate according to the further attribute given in the answer. Both *láp* (secret) and *láp* (sleep) best exemplify the paraphonic play. Finally, the pseudomorpheme *ʔaː* in (4) is the main source of humor. The word *ʔaː*, referring to an aunt or an uncle, is presented in the question to trick the hearer to think that the answer should be something about relatives. However, the solution *ʔaː.lá.wá.t* (act madly) allows the humorous interpretation to emerge as the riddle plays with the apparent morpheme *ʔaː*, though not genuinely extractable in ordinary morphology.

Besides the observations, 40 filler items in question-response format were included and rearranged in sets using a Latin square design. In total, each participant completed 60 trials in this task. Each trial was followed by a 10-point rating in which participants evaluated how funny they found the question-response pair, with 1 indicating not funny at all and 10 indicating truly funny. In the present study, this measure is referred to as humor appreciation, representing participants' subjective evaluative judgment of the humorous stimulus rather than an objective measure of successful humor communication.

Data collection procedures

Data collection consisted of a pre-recruitment stage and an experimental stage. In the pre-recruitment stage, interested individuals completed an application form containing the first part of the language and demographic background questionnaire and GHQ. Only candidates with GHQ scores not exceeding 1 were invited to the experimental stage to reduce possible confounds related to psychological distress or health-related factors. In the experimental stage, participants read an information sheet, provided written informed consent, and completed the tasks in the following order: ANTI, the Corsi block-tapping task, Experiment 1, Experiment 2, the second part of the language and demographic background questionnaire, HSQ, and BDI-II. The BDI-II was administered to quantify individual variation in depressive symptoms for inclusion as a continuous covariate in the statistical analyses. Practice sessions were provided before the ANTI and each experimental task to familiarize participants with the procedures prior to the actual trials.

Research ethics

This study was approved by the Institutional Review Board of Chulalongkorn University (COA No. 504/67; Research Project No. 670362). Prior to the data collection, all participants were informed about the purpose of the study and the procedures involved. Written informed consent was obtained from each participant. They were also informed that their data would be treated confidentially and anonymously and that they could withdraw from the study at any point without penalty. The study was conducted in accordance with the approved protocol.

Statistical analysis

Data were analyzed using mixed-effects models to account for repeated observations across participants and items. Experimental condition was treated as the main predictor in the lexical decision task, whilst joke type was treated as the main predictor in the humor-processing and appreciation analyses. Relevant demographic, cognitive, psychological, and item-level covariates were included, while all continuous predictors were standardized prior to model fitting. Reaction times below 5 ms and above 5000 ms were excluded, log-transformed, and further inspected through residual-based model criticism. In addition, observations with standardized residuals beyond ± 2.5 SD were excluded before refitting the primary models (Harald Baayen & Milin, 2010). Model diagnostics included residual normality, heteroscedasticity, influential observations, multicollinearity, convergence, and singular fit. As per the appreciation ratings, cumulative link mixed models were fitted, for the 10-point scale was treated as ordinal (Bürkner & Vuorre, 2019). Gaussian LMMs and Gamma GLMMs were considered as sensitivity checks where appropriate.

Results

Experiment 1: Lexical access

Regarding the control condition, both M and MS accommodated faster responses. Condition M held a negative coefficient, indicating shorter standardized logRT than Condition C ($\beta = -0.151$, $SE = 0.060$, $p < .05$). Likewise, Condition MS demonstrated the same direction with a larger estimate ($\beta = -0.205$, $SE = 0.062$, $p < .05$). Meanwhile, Conditions Ph ($\beta = -0.061$, $SE = 0.066$, $p = .36$) and S ($\beta = 0.042$, $SE = 0.063$, $p = .50$), despite relatedness toward target words, failed to significantly accommodate faster lexical access speed. In addition, among

covariates included in the model, grapheme count was positively associated with RT ($\beta = 0.201$, $SE = 0.014$, $p < .05$), indicating slower RTs for longer stimuli.

In conclusion, Experiment 1 suggested that lexical access was facilitated by morphological and morpho-semantic relatedness. The findings suggested Thai speakers were sensitive to lexical and morphological relations in a non-humorous task.

Experiment 2: Morphophonological joke processing and appreciation

The analyses toward the statistical models for Experiment 2 were divided into two parts: the RTs obtained from the critical and spillover regions (Giora, 2011; Marsden et al., 2018; Jegerski & Keating, 2023), and for the appreciative ratings (Sperber & Wilson, 1986; 1995).

Reading Times at the Critical and Spillover Regions

With hahaphony as the reference condition, no joke category attained the statistical significance threshold: Homonymy ($\beta = -0.025$, $SE = 0.063$, $p = .69$), paraphony ($\beta = 0.041$, $SE = 0.065$, $p = .53$), and polysemy ($\beta = -0.086$, $SE = 0.067$, $p = .20$).

Though the joke types did not exhibit a broad critical-region effect in the primary hahaphony-reference model, several covariates indicated associations with the RTs. Age ($\beta = 0.486$, $SE = 0.173$, $p < .05$), executive control ($\beta = 0.246$, $SE = 0.114$, $p < .05$) and student status ($\beta = 0.702$, $SE = 0.248$, $p < .05$) were positively associated with RTs. Note that these effects are treated as covariate adjustments rather than as the main interpretive result as they are not the central theoretical focus of the article.

Pertaining to the priming effect index, the model did not indicate its effects on the critical-region RT in the model ($\beta = -0.009$, $SE = 0.112$, $p = .94$), suggesting an extremely small effect and non-significant index. Thus, the critical-region data provide no evidence that the morphological priming effects obtained from Experiment 1 could explain immediate morphophonological joke processing in morphophonological joke processing.

In addition to the hahaphony-reference model, other models with different reference levels were fitted to observe the linguistic domain comparisons: semantics (polysemy versus homonymy), morphology (paraphony versus hahaphony), and phonology (homonymy versus paraphony). First, the semantic contrast did not demonstrate a reliable difference between polysemy and homonymy ($\beta = 0.061$, $SE = 0.066$, $p = .35$). Thus, jokes designed with a shift between related lexical meanings were processed neither more quickly, nor more slowly than those relying on unrelated meanings with the same form at the point of disambiguation.

Likewise, the phonological contrast indicated no reliable effect. In the homonymy-reference reduced model, paraphony did not differ from homonymy ($\beta = 0.066$, $SE = 0.064$, $p = .30$), stressing that near-sound resemblance feature did not generate a measurable critical-region effect relative to ambiguity with similar phonological form. The contrast on the morphological perspective demonstrated the same overall pattern. That is, hahaphony did not impose different processing time cost ($\beta = -0.041$, $SE = 0.065$, $p = .53$). This finding underlined that the additional restructuring demand was not clearly reflected in critical-region RT when compared with phonologically recoverable sound play.

The contrasts across linguistic perspective did not provide strong evidence that semantic, phonological, or pseudomorphological routes induced clearly different critical-region RT. Any structural differences among the joke types may therefore have emerged more clearly in later evaluative judgment than in immediate RT.

Regarding the RTs in the spillover region, the findings based on the hahaphony-reference model did not demonstrate reliable effects across joke types: homonymy ($\beta = -0.036$, $SE = 0.123$, $p = .77$), paraphony ($\beta = 0.046$, $SE = 0.123$, $p = .71$), and polysemy ($\beta = -0.140$, $SE = 0.123$, $p = .26$). In addition, the participant-level priming predictor was likewise not significant ($\beta = -0.055$, $SE = 0.114$, $p = .63$). Thus, as in the critical region, baseline morphological facilitation from Experiment 1 did not explain RT differences at the post-critical cue region.

The contrasts based on the three linguistic angles pointed to the similar overall conclusion. As per the semantic contrast, homonymy did not differ reliably from polysemy ($\beta = 0.104$, $SE = 0.123$, $p = .40$), indicating that the distinction between related lexical meanings and unrelated meanings sharing form was not reflected in this region. For the phonological contrast, no reliable differences between paraphony and homonymy were significant ($\beta = 0.082$, $SE = 0.123$, $p = .51$). This highlights that near-sound resemblance did not contribute to a measurable post-critical cost relative to same-form ambiguity. Likewise, the morphology-related contrast exhibited no reliable effect, as hahaphony did not differ from paraphony ($\beta = -0.046$, $SE = 0.123$, $p = .71$). In other words, pseudomorphemic restructuring did not produce a measurable spillover-region difference compared to phonologically recoverable sound play.

It could be concluded that the spillover-region findings did not highlight clear evidence that semantic, phonological, or pseudomorphological routes triggered different post-critical processing speed. The hahaphony-reference model did not stress broader differences among joke types, while the three linguistic contrasts were non-significant. Furthermore, the priming

effect index did not predict spillover RT. The Gamma GLMM sensitivity checks stressed the similar substantive conclusion. The spillover data therefore underline that any structural differences among the joke types were not robustly expressed as delayed RT effects, and that the clearest evidence for joke-type differences should be further explored in the appreciation ratings rather than in post-critical RT.

Humor appreciation scores

In addition to processing time, appreciation ratings were analyzed as the evaluative outcome of this experiment. Contrary to RT, the score data reveal the participants' final judgment toward each morphophonological joke worked after the humorous interpretation had been reached. As per the descriptive statistics, uneven appreciation across joke types was found across all joke types. That is, homonymy received the highest mean rating ($M = 5.65$, $SD = 2.80$), followed by paraphony ($M = 5.57$, $SD = 2.80$). Meanwhile, hahaphony ($M = 4.87$, $SD = 2.68$) and polysemy ($M = 4.84$, $SD = 2.63$) were reported with lower averaged ratings.

In the hahaphony-reference model, it was demonstrated that homonymy ($\beta = 0.691$, $SE = 0.306$, $p = .024$) and paraphony ($\beta = 0.643$, $SE = 0.308$, $p = .037$) were rated with higher appreciation ratings than hahaphony. In contrast, polysemy did not differ from hahaphony ($\beta = 0.036$, $SE = 0.306$, $p = .91$). Therefore, a clearer evaluative separation between hahaphony and the two form-based joke types, homonymy and paraphony, were stressed than between hahaphony and polysemy.

In addition, the priming effect index was not able to predict appreciation ratings. According to the primary CLMM, the index did not reach the statistical significance threshold ($\beta = -0.510$, $SE = 0.355$, $p = .15$). The contrasts across three linguistic perspectives were in parallel with the interpretation of the score pattern. Semantically, homonymy was rated higher than polysemy ($\beta = 0.655$, $SE = 0.305$, $p < .05$).

Contrastively, a different pattern was observed from the phonological contrast. Paraphony did not differ from homonymy ($\beta = -0.048$, $SE = 0.305$, $p = .87$), underlying that near-sound resemblance and same-form ambiguity contributed to comparable appreciation levels. As per the morphological domain, hahaphony was found to contrast paraphony. That is, hahaphony received significantly lower ratings than paraphony ($\beta = -0.643$, $SE = 0.308$, $p < .05$).

In conclusion, the findings regarding the appreciation scores underscore a pattern not evident in the RT analyses. The critical and spillover RT models revealed limited evidence for differences among the linguistically defined routes, whilst the score model differentiated the

joke types more clearly. Same-form ambiguity and near-sound resemblance appear to have supported appreciation more effectively than related lexical ambiguity or pseudomorphemic restructuring in the present data.

Across both experiments, the results demonstrated a rather clear contrast between processing time and evaluative judgment. Experiment 1 highlighted that lexical access was facilitated by morphological and morpho-semantic relatedness, providing a baseline for the humor task. Meanwhile In Experiment 2, this baseline facilitation did not reliably predict either critical-region or spillover-region RT. All models of the processing speed did not reveal evidence that the three linguistic routes toward reinterpretation induced different online processing patterns. The appreciation ratings however pointed to a clearer structure. Homonymy and paraphony were rated more favorably than hahaphony. The analytical contrasts suggested that same-form ambiguity and near-sound resemblance were more associated with appreciation than polysemy or pseudomorphemic restructuring. Thus, joke structure was more visible in final appreciation than in immediate or post-critical RT.

Discussion

Lexical access and priming effect index as a baseline for humor processing

Experiment 1 served as both lexical-access evidence and a non-humorous baseline for interpreting Experiment 2. The facilitation as observed from the morphological and morpho-semantic conditions demonstrates that participants were sensitive to lexical and morphological relatedness in lexical decision. Nevertheless, the priming effect index failed to predict RTs or appreciation ratings in the humor task, even after joke type and covariates were considered. This pinpoints that morphophonological humor processing cannot be reduced to general morphological facilitation. Rather, lexical access provides only a baseline condition. That is, joke comprehension and appreciation depend on whether each joke type offers a recoverable route from an unexpected answer to a humorous reinterpretation.

Online processing and the limited evidence of RT differences

Neither the critical nor spillover-region RT models exhibited reliable differences among joke types. At the critical region, the hahaphony-reference model and contrasts did not distinguish semantic, phonological, and pseudomorphological routes, suggesting no clear evidence of different immediate processing costs. However, the spillover models also demonstrated no reliable joke-type differences. The priming effect index did not predict post-

critical RT. This absence of robust RT effects may reflect the short answer segments, which typically contained only three syllables. Longer answer regions may be needed to determine whether such effects emerge later.

Appreciation ratings and routes to humorous reinterpretation

The appreciation ratings provided a clearer direction toward how morphophonological structure shaped humor evaluation. Unlike RTs, appreciation ratings capture participants' final judgment after the intended interpretation has been recovered. The results underline that humor appreciation was driven less by general processing ease than by the recoverability and resolution of the reinterpetive route. Homonymy was rated higher than polysemy, indicating that semantic relatedness alone was not sufficient to produce stronger appreciation. Instead, the sharper shift in homonymy may have supported a clearer movement between competing interpretations, rendering the humorous resolution more salient as a joke (Raskin, 1985; Attardo & Raskin, 1991).

Paraphony was appreciated as strongly as homonymy and more strongly than hahaphony. This pattern pinpoints that near-sound resemblance can guide readers toward the intended humorous meaning as effectively as same-form ambiguity, whilst hahaphony requires a more marked pseudomorphemic restructuring that may be less reliably recoverable.

Overall, the appreciation results indicate that higher-rated morphophonological humor in the present task was associated with a recoverable route to reinterpretation with sufficient contrast. The linguistic form must provide enough information for readers to recover the intended meaning while also allowing an interpretive shift to be evaluated as humorous. Importantly, successful linguistic decoding should not be equated with successful humor communication. A participant may recover the intended alternative meaning without finding the stimulus highly amusing, and a favorable numerical rating does not necessarily entail spontaneous laughter, smiling, emotional engagement, or social success in an interpersonal setting. The present measures therefore distinguish processing effort, meaning recovery, and subjective appreciation, but do not directly measure observable amusement or the interpersonal success of a joke.

The Thai data also allow the appreciation pattern to be interpreted in relation to language-specific form–meaning resources. The paraphonic contrast between *láp* ‘sleep’ and *láp* ‘secret’ illustrates how a tonal difference can redirect lexical interpretation while preserving substantial phonological similarity. Hahaphony, by contrast, requires the reader to

treat ʔa: ‘aunt/uncle’ as an apparent morpheme within ʔa:.lá.wâ:t ‘act madly’, although this segmentation is not available in the ordinary morphological structure of the word. This difference may help explain why paraphony was appreciated more strongly than hahaphony in the present data: the former preserves a recognizable phonological pathway to the intended expression, whereas the latter requires a less conventional restructuring of linguistic form. This interpretation is consistent with previous observations that Thai humor makes productive use of compounding, ambiguity, wordplay, phonetic patterning, and sound manipulation (Jaroenkiatboworn, 2007; Woraseeha, 2024). These properties do not imply that Thai is unique in exploiting phonological or morphological humor; rather, Thai provides an informative linguistic setting in which tonal, syllabic, lexical, and apparent morphemic relationships can jointly contribute to humorous reinterpretation. At the same time, these morphophonological mechanisms constitute only one part of a rather broader Thai humor repertoire. The four categories examined here therefore should not be interpreted as representing the full range of Thai humor, which may also draw on discourse, performance, social relationships, cultural references, and other verbal and nonverbal conventions.

Theoretical implications

Relevance Theory (RvT)

As per RvT, the way readers have to infer the intended meaning embedded with statements is relevant to the self-paced reading task that the participants had to do. The stimuli become humorous only when the readers can construct an interpretation, which make the inferential effort worthwhile (Sperber & Wilson, 1986, 1995; Yus, 2016). As per the appreciation findings, it was suggested that homonymy and paraphony supported this process more effectively than hahaphony.

This pattern may be explained by the quality of the cues available for reinterpretation. Homonymy preserves morphological identity, whereas paraphony provides sufficient sound resemblance to guide readers back to the intended expression (Yus, 2016). Hahaphony, by contrast, depends on a less conventional restructuring of form, requiring readers to accept a playful rather than conventionally licensed morphemic analysis. Its lower appreciation therefore suggests that successful verbal humor depends not only on incongruity, but also on how recoverable the relevant interpretation is.

Benign Violation Theory (BVT)

The appreciation pattern can also be interpreted through BVT (McGraw & Warren, 2010), arguing that humor emerges when a violation is perceived as acceptable or playful rather than merely wrong or confusing. However, in the present study, the relevant violation is linguistic, unlike moral or social violation as discussed in previous studies related to the theory.

The jokes disrupt ordinary expectations about how meanings, sounds, and word forms should relate to one another. Homonymy and paronymy appear to keep this violation relatively recoverable. That is, homonymy preserves the same form while shifting meaning, whilst paronymy preserves sufficient sound resemblance to guide the readers toward the intended expression. Haphony, by contrast, requires a less conventional pseudomorphemic restructuring. Its lower appreciation ratings point out that a linguistic violation may become less successful as humor when the route to recovery is less direct.

In this sense, the findings extend the application of Benign Violation Theory to morphophonological humor. The discussion suggests that such disruption can support humor when readers can still recover it as playful word use, but becomes less effective when the intended reinterpretation is harder to stabilize.

In details, homonymy and paronymy may have been appreciated more as their violations were easier to remain benign. Homonymy shifts meaning while preserving the same form. Paronymy changes the form but preserves enough sound resemblance to aid recovery. Furthermore, haphony requires the reader to accept a pseudomorphemic restructuring that does not belong to ordinary morphology. The violation is still linguistic play, but becomes too challenging to resolve smoothly (McGraw et al., 2012). If the intended meaning is not recovered with sufficient confidence, the violation risks remaining strange rather than funny.

This point explains why the RT and score results diverged. A reader may process the answer without a measurable delay. However, the final judgment still depends on whether the violation becomes recoverable and worthwhile. The study therefore extends BVT into the domain of linguistic form. That is, morphophonological humor succeeds when the violation of lexical, phonological, or morphological expectation remains recoverable enough to be treated as playful.

Synthesis across processing levels

The findings point to a dissociation among lexical access, online joke processing, and final appreciation. Morphological and morpho-semantic relatedness facilitated lexical access, but the participant-level priming index derived from this facilitation did not account for later reaction times or appreciation. Joke type was likewise more clearly differentiated in appreciation than in online processing. Rather than representing a single continuum, lexical access, online reinterpretation, and final evaluation therefore appear to capture partly separable components of morphophonological humor processing.

One interpretation is that lexical access primarily reflects sensitivity to form-based relatedness, whereas humor appreciation depends more strongly on whether an alternative interpretation can be recovered with sufficient contrast to produce a satisfying humorous resolution. This difference in processing demands may explain why the clearest joke-type effects emerged in evaluative ratings rather than in immediate reading times. The findings therefore refine a simple processing-ease account: easier access to linguistic relations does not necessarily translate into faster humorous reinterpretation or stronger appreciation. More broadly, the present design extends experimental work on verbal humor by separating a non-humorous lexical-access baseline, online joke processing, and final evaluation, demonstrating that these levels need not vary in parallel.

Limitations and future directions

Several limitations of the research should be considered. First, the number of participants and items was modest and each joke type contributed a limited number of observations per participant. A larger stimulus set would allow stronger examinations of whether the similar pattern holds across a wider range of Thai morphophonological jokes.

Second, the use of self-paced reading with text-only stimuli necessarily restricted the communicative cues available to participants. The experimental riddles were presented without vocal intonation, prosody, facial expressions, gestures, storyteller persona, shared atmosphere, or interpersonal interaction, all of which may contribute to humor in naturally occurring communication. The controlled written format was useful for isolating linguistic processing, but the findings therefore represent humor processing under controlled text-based experimental conditions rather than the full experience of humor in everyday interaction. In addition, self-paced reading may not detect subtle timing differences as precisely as eye-tracking or event-related potentials (Rayner et al., 2006; Haimi & Pesonen, 2017).

In addition, the numerical appreciation ratings should not be equated with spontaneous amusement. Participants could assign a rating without laughing, smiling, or displaying other emotional or behavioral responses, none of which were directly measured in the present study.

Besides, participants may also have differed in their familiarity with particular riddle formats, wordplay conventions, linguistic patterns, or culturally familiar joke structures. Prior exposure could plausibly facilitate the recovery of an intended interpretation or influence how amusing a joke was perceived to be. Because familiarity with individual stimuli and broader exposure to these humor conventions were not directly measured, their possible contribution to both reaction times and appreciation ratings cannot be separated from the effects examined here. Other unmeasured individual differences, including lifestyle, media exposure, frequency of exposure to humorous content, and previous experience with verbal humor, may likewise have contributed to variation in the responses. Although age, biological sex, education, occupation, cognitive measures, psychological measures, and humor styles were incorporated where relevant, the modest sample was not designed to support strong comparisons among demographic subgroups. Replication with a larger and more demographically diverse sample is therefore warranted.

Finally, the present study focused on four morphophonological joke types in Thai riddle-like stimuli. Other humor formats may produce different patterns, including mental humor (Bischetti et al., 2019). Future research should extend the present design to a broader range of humor categories and more naturalistic modes of presentation. Spoken and audiovisual stimuli could incorporate prosody, facial expression, gesture, and performer characteristics, while interactive or naturally occurring humor could provide stronger evidence concerning interpersonal humor communication. In addition to reaction times and numerical ratings, future studies could examine laughter, smiling, facial behavior, physiological responses, interviews, or qualitative feedback. Larger and more diverse samples would also permit comparisons across demographic groups, levels of humor exposure, and different Thai humor traditions.

More specifically, the scope of the conclusions is psycholinguistic rather than broadly socio-cultural. The present study provides evidence about lexical access, online reading, and evaluative responses to controlled written verbal-humor stimuli. It provides more limited evidence about humor as experienced in everyday Thai communication, where prosody, gesture, facial expression, interpersonal relationships, performer identity, cultural familiarity,

and immediate social context may jointly influence whether humor is understood, appreciated, or socially successful. Accordingly, the findings should be understood as applying to the four linguistic mechanisms and riddle format examined here, rather than as a general characterization of Thai verbal humor.

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Statement on the use of AI

The use of generative AI was twofold. First, the generative AI was used for debugging codes for statistical models in R. Furthermore, it was used for editorial support during manuscript preparation, particularly for language refinement and readability. The author critically reviewed all suggested revisions and assumes complete responsibility for the final content of the manuscript.

References

- Attardo, S., & Raskin, V. (1991). Script theory revis(it)ed: Joke similarity and joke representation model. *HUMOR*, 4(3–4), 293–348.
<https://doi.org/10.1515/humr.1991.4.3-4.293>

- Baayen, R. H., & Milin, P. (2010). Analyzing reaction times. *International Journal of Psychological Research*, 3(2), 12–28. <https://doi.org/10.21500/20112084.807>
- Bischetti, L., Ceccato, I., Lecce, S., Cavallini, E., & Bambini, V. (2019). Pragmatics and theory of mind in older adults' humor comprehension. *Current Psychology*, 42, 16191-16207.
- Bürkner, P.-C. & Vuorre, M. (2019). Ordinal regression model in psychology: A tutorial. *Advances in Methods and Practices in Psychological Science*, 2(1), 77- –101
- Callejas, A., Lupiáñez, J., & Tudela, P. (2004). The three attentional networks: On their independence and interactions. *Brain and Cognition*, 54(3), 225–227. <https://doi.org/10.1016/j.bandc.2004.02.012>
- Chanchaochai, N. (2019). *Language Profiles of Thai Children with Autism: Lexical, Grammatical, and Pragmatic Factors* [Doctoral dissertation, University of Pennsylvania]. ScholarlyCommons. <https://repository.upenn.edu/handle/20.500.14332/30599>
- Corsi, P. (1972). *Memory and the Medial Temporal Region of the Brain* [Doctoral dissertation, McGill University]. Proquest. <https://www.proquest.com/docview/220126758>
- Dienhart, J. M. (1999). A linguistic look at riddles. *Journal of Pragmatics*, 31, 95-125.
- Giora, R. (1997). Understanding figurative and literal language: The graded salience hypothesis. *Cognitive Linguistics*, 8(3), 183-206.
- Giora, R. (2003). *On our mind: Salience, context, and figurative language*. Oxford University Press.
- Giora, R. (2011). Will anticipatory irony facilitate it immediately?. In M. Dynel (Ed.), *The pragmatics of humour across discourse domains* (pp. 19-32). John Benjamins Publishing Company.
- Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological medicine*, 9(1), 139-145.
- Haimi, E. & Pesonen, J. (2017). Event-related potentials in response to irony in depressed and healthy controls [Master's thesis, Jyväskylä University]. Jyväskylä University Library. https://jyx.jyu.fi/jyx/Record/jyx_123456789_54571
- Jaroenkiatboworn, K. (2007). Compounding construction in Thai: Its contribution to humor. *HUMOR*, 20(3), 261-275. <https://doi.org/10.1515/HUMOR.2007.013>

- Jegerski, J., & Keating, G. D. (2023). Using self-paced reading in research with heritage speakers: A role for reading skill in the online processing of Spanish verb argument specifications. *Frontiers in Psychology, 14*, 1056561.
<https://doi.org/10.3389/fpsyg.2023.1056561>
- Li, X., Wang, H., Liu, H., Liu, S., & Wang, H. (2025). Attentional resource consumption of verbal-humor processing: An ERP study. *Journal of Neurolinguistics, 73*, 101224.
- Marsden, E., Thompson, S., & Plonsky, L. (2018). A methodological synthesis of self-paced reading in second language research. *Applied Psycholinguistics, 39*(5), 861–904.
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. A. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality, 37*, 48-75.
- McGraw, A. P., & Warren, C. (2010). Benign violations: Making immoral behavior funny. *Psychological science, 21*(8), 1141-1149.
- McGraw, A. P., Warren, C., Williams, L. E., & Leonard, B. (2012). Too close for comfort, or too far to care? Finding humor in distant tragedies and close mishaps. *Psychological Science, 23*(10), 1215–1223. <https://doi.org/10.1177/0956797612443831>
- Nilchaikovit, T., Sukying, C., & Silpakit, C. (1996). Reliability and validity of the Thai version of the General Health Questionnaire. *Journal of the Psychiatric Association of Thailand, 41*(1), 2-17.
- Phakdeephassook, S. (2003). Dynamics and Interconnectivity of Riddling in the Social Life of Central Thailand [Doctoral dissertation, University of Pennsylvania]. ProQuest.
<https://www.proquest.com/openview/4c48b1acdda9ad7e0f410c925d571306>
- Raskin, V. (1985). *Semantic mechanisms of humor*. D. Reidel.
- Rayner, K., Chace, K. H., Slattery, T. J., & Ashby, J. (2006). Eye movements as reflections of comprehension processes in reading. *Scientific Studies of Reading, 10*(3), 241-255.
- Sperber, D., & Wilson, D. (1986). *Relevance: Communication and Cognition* (First edition). Blackwell.
- Sperber, D., & Wilson, D. (1995). *Relevance: Communication and Cognition* (Second edition). Blackwell Publishers Ltd.
- Thavichachart, N., Tangwongchai, S., Worakul, P., Kanchanatawan, B., Suppakitiporn, S., Pattalung, A. S. N., ... & Chareonsook, O. (2009). Posttraumatic mental health establishment of the Tsunami survivors in Thailand. *Clinical practice and epidemiology in mental health, 5*, 1-9.

Veatch, T. C. (1998). A theory of humor. *HUMOR*, 11(2), 161–216.

<https://doi.org/10.1515/humr.1998.11.2.161>

Woraseeha, K. (2024). Linguistic Strategies for Creating Humor in the Variety Sitcom "Talok hok chak". *University of the Thai Chamber of Commerce Journal Humanities and Social Sciences*, 44(4), 117–135.

Yus, F. (2016). *Humor and Relevance Volume 4*. John Benjamins Publishing Company.

Zheng, W., & Wang, X. (2022). Contextual support for less salient homophones and pun humor appreciation: Evidence from eye movements in reading Chinese homophone puns. *Frontiers in Psychology*, 13, 875479. <https://doi.org/10.3389/fpsyg.2022.875479>

Zheng, W., & Wang, X. (2023). Humor experience facilitates ongoing cognitive tasks: Evidence from pun comprehension. *Frontiers in Psychology*, 14, 1127275.

<https://doi.org/10.3389/fpsyg.2023.1127275>

Zurlo, M.C., & Ruggiero, M. (2021). Assessing pragmatic language skills in adults with major depressive disorder: an exploratory study. *Psychopathology*, 54(2), 78-91.

<https://doi.org/10.1159/000513270>



Appendix

Polysemy

ID	Question1	Question2	Question3	Question4	Question5
1B-PO01	กิน	อะไร	ไม่	เคย	อิม
	kin	ʔà.raj	mâj	kʰɛːj	ʔim
	eat	what	NEG	already	full
	‘What does people eat but cannot make them full?’				
	Pre-critical	Critical	Spillover		
	กิน	ใจ	จิง		
	kin	tɕaj	tɕaŋ		
	eat	heart	much		
	‘Touched very much.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO02	ต้น	อะไร	คน	ไม่	ชอบ
	tôn	ʔà.raj	kʰon	mâj	tɕʰɔːp
	tree	what	human	NEG	like
	‘Which tree does human not like?’				
	Pre-critical	Critical	Spillover		
	ต้น	เรื่อง	ใจ		
	tôn	rûaŋ	ŋaj		
	cause	DECOMP	PRT		
	‘The cause of the issue.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO03	ใจ	อะไร	เกือบ	หยุด	เต้น
	tɕaj	ʔà.raj	kʷap	jüt	tên
	Heart	what	almost	stop	beat
	‘Which heart almost stops beating?’				
	Pre-critical	Critical	Spillover		
	ใจ	ละ	ลาย		
	tɕaj	lá	laːj		
	Heart	melt	DECOMP		
	‘The heart that melts.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO04	ดอก	อะไร	ไม่	มี	กลีบ
	dɔːk	ʔà.raj	mâj	miː	kliːp
	flower	what	NEG	have	petal
	‘Which flower does not have petals?’				
	Pre-critical	Critical	Spillover		
	ดอก	เบี้ย	บาน		
	dɔːk	bia	baːn		
	interest	DECOMP	growing		
	‘Rising interest.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO05	ตีน	อะไร	มี	แต่	ขน
	tiːn	ʔa.raj	miː	tɛː	kʰǎn
	foot	what	have	just	hair
	‘Which foot has just hair?’				
	Pre-critical	Critical	Spillover		
	ตีน	ตุ๊ก	แก		
	tiːn	túk	kɛː		
	velcro	DECOMP	DECOMP		
	‘Velcro.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO06	ถือ	อะไร	ไม่	ปวด	แขน
	tʰǔi:	ʔà.raj	mâj	púat	kʰǎi:n
	hold	what	NEG	pain	arm
	‘What could be held without causing arm pain?’				
	Pre-critical	Critical	Spillover		
	ถือ	ศีล	แปด		
	tʰǔi:	sǎi:n	pɛ:t		
	Observe.POLY	precept	eight		
	‘Observe eight precepts.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO07	ใบ	อะไร	ไม่	มี	ต้น
	baj	ʔà.raj	mâj	miː	tôn
	leave	what	NEG	have	tree
	‘What has leaves without tree?’				
	Pre-critical	Critical	Spillover		
	ใบ	สั่ง	ยา		
	baj	sàŋ	jaː		
	prescription	DECOMP	medicine		
	‘Medical prescription.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO08	ไฟ	อะไร	ร้อน	ที่	สุด
	faj	ʔà.raj	rɔ̌:n	tʰi:	sùt
	fire	what	hot	at	most
	‘What fire burns the hottest?’				
	Pre-critical	Critical	Spillover		
	ไฟ	จุก	ตูด		
	faj	tɕùk	tù:t		
	fire	tight	ass		
	‘The upcoming deadline.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO09	หนัง	อะไร	ดู	แล้ว	ง่วง
	นั้ญ	ʔà.raj	duː	lɛːw	ŋú.aŋ
	movie	what	watch	already	sleepy
	‘What movie makes ones sleepy?’				
	Pre-critical	Critical	Spillover		
	หนัง	สื่อ	เรียน		
	นั้ญ	sພໍː	rian		
	book	DECOMP	study		
	‘A textbook.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO10	หลัง	อะไร	เป็น	สี	แดง
	ลั้ญ	ʔà.raj	pen	sɿː	dɛːŋ
	back	what	be	color	red
	‘Which back is red?’				
	Pre-critical	Critical	Spillover		
	หลัง	คา	โบสถ์		
	ลั้ญ	kʰaː	bòːtʰ		
	back	roof	church		
	‘The roof of a church.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO11	ร่ม	อะไร	ไม่	ต้อง	กาง
	róm	ʔà.raj	māj	tɔ̌iːŋ	kaːŋ
	umbrella	what	not	must	open
	‘Which umbrella does not have to be open?’				
	Pre-critical	Critical	Spillover		
	ร่ม	รื่น	จิ้ง		
	róm	rŭnːn	tɕaŋ		
	shady.POLY	pleasant	quite		
	‘Quite shady.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO12	มือ	อะไร	ไม่	มี	นิ้ว
	mɯː	ʔà.raj	māj	miː	niw
	hand	what	NEG	have	fingers
	‘What hand does not have fingers?’				
	Pre-critical	Critical	Spillover		
	มือ	ถือ	ใจ		
	mɯː	tʰɯː	ŋaj		
	hand	hold	PRT		
	‘A mobile phone; lit. hand-held’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO13	หน้า	อะไร	ไม่	มี	สิ่ว
	nǎː	ʔǎːraj	māj	miː	sǎw
	face	what	NEG	have	acne
	‘What face does not have acne?’				
	Pre-critical	Critical	Spillover		
	หน้า	ปก	ใจ		
	nǎː	pókʰ	ɲaj		
	page.POLY	cover page	PRT		
	‘The cover page.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO14	กรง	อะไร	ไม่	ขัง	คน
	kroŋ	ʔà.raj	māj	kʰǎŋ	kʰon
	cage	what	NEG	confine	people
	‘What cage does not confine people?’				
	Pre-critical	Critical	Spillover		
	กรง	เล็บ	แมว		
	kroŋ	lɛ̀p`	mɛ̀ːw		
	cage	nails	cat		
	‘A cat’s claw.				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO15	กล้วย	อะไร	ไม่	เป็น	ลูก
	klɔ̌aj	ʔà.raj	māj	pen	lúːkʰ
	banana	what	NEG	be	fruit
	‘Which banana does not come in fruit?’				
	Pre-critical	Critical	Spillover		
	กล้วย	กล้วย	ใจ		
	klɔ̌aj	klɔ̌aj	ŋaj		
	banana	banana	PRT		
	‘Very easy.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO16	น้ำ	อะไร	ไม่	ชอบ	เลย
	náːm	ʔà.raj	māj	tɕʰɔ̌ːp	lɛːj
	water	what	NEG	like	at all
	‘What water is hated the most?’				
	Pre-critical	Critical	Spillover		
	น้ำ	หน้า	ใจ		
	náːm	nǎː	ɲaj		
	water	face	PRT		
	‘Your face.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO17	ตา	อะไร	มอง	ไม่	เห็น
	taː	ʔà.raj	mɔːŋ	māj	hě̃n
	eye	what	look	NEG	see
	‘What eye cannot see?’				
	Pre-critical	Critical	Spillover		
	ตา	ตุ้ม	ใจ		
	taː	túm	ɯaj		
	ankle	DECOMP	PRT		
	‘The ankle.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO18	โครง	อะไร	ไร้	กระดูก	ดู
	kʰroːŋ	ʔà.raj	rāj	krà	dùːkː
	skeleton	what	without	bone	DECOMP
	‘Which skeleton does not have bones?’				
	Pre-critical	Critical	Spillover		
	โครง	การ	ครับ		
	kʰroːŋ	kaːn	kʰrápː		
	structure.POLY	project	PRT		
	‘A project.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO19	ปาก	อะไร	พูด	ไม่	ได้
	pàːkː	ʔà.raj	pʰùːtː	māj	dāj
	mouth	what	speak	NEG	can
	Pre-critical	Critical	Spillover		
	ปาก	น้ำ	โพธิ์		
	pàːkː	nǎːm	pʰoː		
	Pak.POLY	Nam-POLY	NAME		
	'Paknampho.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PO20	ทอง	อะไร	ห้าม	ห้อย	คอ
	tʰɔːŋ	ʔà.raj	hǎːm	hɔ̃j	kʰɔː
	gold	what	prohibit	wear	neck
	'What gold necklace is prohibited to be worn?'				
	Pre-critical	Critical	Spillover		
	ทอง	ม้วน	ครับ		
	tʰɔːŋ	múan	kʰrápː		
	rolled wafer.POLY	DECOMP	PRT		
	'Rolled wafer.'				

Homonymy

ID	Question1	Question2	Question3	Question4	Question5
1B-HO01	ขน	อะไร	เจอ	ไป	ทั่ว
	kʰǒn	ʔà.raj	tɕaː	paj	tʰua
	hair	what	find	go	everywhere
	‘What hair can be found everywhere?’				
	Pre-critical	Critical	Spillover		
	ขน	ส่ง	ครับ		
	kʰǒn	sòŋ	kʰráp		
	deliver.HOM	delivery man	PRT		
	‘Delivery man.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO02	เขา	อะไร	อยู่	ใกล้	มาก
	kʰǎw	ʔà.raj	jùː	klâj	mâːk
	mount	what	be	near	much
	‘Which mount is very close?’				
	Pre-critical	Critical	Spillover		
	เขา	ชอบ	ฉัน		
	kʰǎw	tɕʰǎiːp	tɕʰǎn		
	3SG.HOM	like	1SG		
	‘He likes me.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO03	คน	อะไร	เนื้อ	เนียน	เลย
	kʰon	ʔà.raj	nua	nian	lɔːj
	human	what	skin	fine	much
	‘Which human has very fine skin?’				
	Pre-critical	Critical	Spillover		
	คน	นาน	นาน		
	kʰon	naːn	naːn		
	stir.HOM	long	long		
	‘Stir for a long time.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO04	ค่า	อะไร	ทุ่ม	สุด	ตัว
	kʰáː	ʔà.raj	tʰúm	sút	tua
	cost	what	invest	all	body
	‘What cost has to be all invested in?’				
	Pre-critical	Critical	Spillover		
	ค่า	รัก	เอ็ง		
	kʰáː	rák	ʔeŋ		
	1SG.HOM	I love	2SG		
	‘I love you.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO05	ช่าง	อะไร	งาน	ไม่	เสร็จ
	tʰaːŋ	ʔà.raj	ŋaːn	māj	sèt̚
	technician	what	work	NEG	finish
	'Which technician does not finish his work?'				
	Pre-critical	Critical	Spillover		
	ช่าง	มัน	เถอะ		
	tʰaːŋ	man	tʰaː		
	let.HOM	3SG	be		
	'Let it be.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO06	ด้าย	อะไร	ทำ	งาน	หนัก
	dāːj	ʔaːraj	tʰam	ŋaːn	nākʰ
	thread	what	do	work	hard
	‘Which thread works hard?’				
	Pre-critical	Critical	Spillover		
	ด้าย	ค่ะ	แม่		
	dāːj	kʰa	mɛ̌ː		
	Yes.HOM	PRT	mom		
	‘Noted that, mom.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO07	โถ	อะไร	ไร้	สี	ส้น
	tʰǎː	ʔà.raj	rāj	sǐː	sǎn
	jar	what	without	color	EXPR
	‘Which jar is not vivid in color?’				
	Pre-critical	Critical	Spillover		
	โถ	ซี	วิต		
	tʰǎː	tʰhǐː	wit̚		
	Oh.HOM	life	DECOMP		
	‘Oh! Darn, life.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO08	ท่า	อะไร	มี	สอง	คน
	tʰaː	ʔà.raj	miː	sǔːŋ	kʰon
	pier	what	have	two	people
	'What pier has two people?'				
	Pre-critical	Critical	Spillover		
	ท่า	มี	เธอ		
	tʰaː	miː	tʰŋː		
	if.HOM	have	2SG		
	'If I have you"				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO09	ขน	อะไร	หา	ไม่	เจอ
	kʰǒn	ʔǎ.raj	hǎi	māj	tɕʰɔː
	hair	what	find	NEG	meet
	‘What hair cannot be found?’				
	Pre-critical	Critical	Spillover		
	ขน	ของ	หนี		
	kʰǒn	kʰǔːŋ	nǎi		
	pack.HOM	things	flee		
	‘Pack things up and flee.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO10	ตา	อะไร	เริ่ม	ทำ	งาน
	taː	ʔà.raj	rɯ̌ːm	tʰam	ŋaːn
	eye	what	start	do	work
	‘Which eye stars working?’				
	Pre-critical	Critical	Spillover		
	ตา	ฉัน	แล้ว		
	taː	tɕʰǎn	lɛːw		
	turn.HOM	1SG	already		
	‘My turn now.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO11	ฝน	อะไร	เป็น	สี	ดำ
	fǒn	ʔǎ.raj	pen	sǎi:	dam
	rain	what	be	color	black
	‘What rain is black?’				
	Pre-critical	Critical	Spillover		
	ฝน	คำ	ตอบ		
	fǒn	kʰam	tɔ̌:p		
	blacken.HOM	answer	DECOMP		
	‘Blacken the selected answer.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO12	ฟัน	อะไร	แข็ง	แรง	มาก
	fan	ʔǎ.raj	kʰǎŋ	rɛːŋ	māːk
	tooth	what	strong	DECOMP	much
	‘What tooth is very strong?’				
	Pre-critical	Critical	Spillover		
	ฟัน	ไม่	เข้า		
	fan	māj	kʰǎw		
	stab.HOM	NEG	enter		
	‘unable to be killed.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO13	คุณ	อะไร	ใคร	ก็	ชอบ
	kʰun	ʔa.raj	kʰraj	kʷiː	tɕʰiːpʰ
	you	what	who	PRT	like
	‘Which (one of) you does anyone like?’				
	Pre-critical	Critical	Spillover		
	คุณ	ภาพ	ใจ		
	kʰun	pʰaːpʰ	ɯaj		
	quality	DECOMP	PRT		
	‘Quality.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO14	สระ	อะไร	ว่าย	ไม่	ได้
	sà	ʔà.raj	wàːj	māj	dāj
	pool	what	swim	NEG	can
	‘In which pool can’t one swim?’				
	Pre-critical	Critical	Spillover		
	สระ	บุ	รี		
	sà.rà	bù	riː		
	Saraburi.NAME	DECOMP	DECOMP		
	‘Saraburi.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO15	สาร	อะไร	ไม่	ละ	ลาย
	sǎːn	ʔǎ.raj	māj	lá	laːj
	substance	what	NEG	melt	DECOMP
	‘What substance can’t be dissolved?’				
	Pre-critical	Critical	Spillover		
	สาร	ตา	ยาย		
	sǎːn	taː	jaːj		
	Shrine.HOM	granddad	grandma		
	‘Ancestral spirit shrine.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO16	เสร็จ	อะไร	งาน	เข้า	เลย
	sètʰ	ʔà.raj	ŋa:n	kʰaw	lɛːj
	finish	what	work	enter	PRT
	‘What is finished that can cause a trouble?’				
	Pre-critical	Critical	Spillover		
	เสร็จ	มัน	แล้ว		
	sètʰ	man	lɛːw		
	be trapped.HOM	3SG	already		
	‘We’re trapped already.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO17	หน้า	อะไร	คน	วิ่ง	หนี
	nǎː	ʔǎ.raj	kʰon	wiŋ	nǎiː
	face	what	human	run	flee
	‘What face makes people run away?’				
	Pre-critical	Critical	Spillover		
	หน้า	กลัว	จึง		
	nǎː	klua	tɕaŋ		
	Frightening.HOM	DECOMP	PRT		
	‘So frightening.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO18	กา	อะไร	ตัว	สี	แดง
	ka:	ʔa.raj	tua	sǎi:	dɛːŋ
	crow	what	body	color	red
	‘What crow is red?’				
	Pre-critical	Critical	Spillover		
	กา	ขาด	ใจ		
	ka:	tɕʰa:t	ŋaj		
	Red Cros.HOM	DECOMP	PRT		
	‘The Red Cross.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO19	หู	อะไร	ทำ	ปาก	กว้าง
	hǎi:	ʔá.raj	tʰam	pà:k	kwá:ŋ
	ear	what	make	mouth	wide
	‘What ear causes surprise?’				
	Pre-critical	Critical	Spillover		
	หู	แพง	จึง		
	hǎi:	pʰɛ:ŋ	tɕaŋ		
	Ooh.HOM	expensive	PRT		
	‘Ooh! So expensive.				

ID	Question1	Question2	Question3	Question4	Question5
1B-HO20	หนี้	อะไร	อยู่	ใกล้	ตัว
	nǐː	ʔa.raj	juː	klāj	tua
	debt	what	be	near	body
	‘What debt is so clse?’				
	Pre-critical	Critical	Spillover		
	หนี้	ใจ	เธอ		
	nǐː	ŋaj	tʰɯː		
	Here.HOM	PRT	2SG		
	‘Here, it is.’				

Paraphony

ID	Question1	Question2	Question3	Question4	Question5
1B-PA01	ค่าย	อะไร	หมอ	คอย	เฝ้า
	kʰāːj	ʔā.rāj	mǎː	kʰɔːj	fāw
	camp	what	doctor	wait	look after
	'What camp has doctors to guard?'				
	Pre-critical	Critical	Spillover		
	ค่าย	เลือด	ออก		
	kʰāːj	เฝ้า	ออก		
	camp.PARA	blood	exit		
	'Blood-letting camp/ dengue fever.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA02	คุม	อะไร	ช่วย	หาย	ป่วย
	kʰum	ʔā.raj	tɕʰuaj	hǎːj	púaj
	control	what	help	recover	illness
	'What is controlled to help recover from illness?'				
	Pre-critical	Critical	Spillover		
	คุม	หมอ	ครับ		
	kʰum	mǎː	kʰrǎp̚		
	control.PARA	doctor	PRT		
	'Control-doctor/ doctor.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA03	วาฬ	อะไร	ช่าง	น่า	เบื่อ
	waːn	ʔā.raj	tɕʰāːŋ	nāː	bɔ̌a
	whale	what	INTENS	DECOMP	boring
	'What whale is so boring?'				
	Pre-critical	Critical	Spillover		
	วาฬ	จันทร์	ใจ		
	waːn	tɕʰan	ŋaj		
	whale.PARA	Monday	PRT		
	'Whale-Monday/ Monday.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA04	เค็ม	อะไร	ทำ	คน	เจ็บ
	kʰem	ʔā.raj	tʰam	kʰon	tɕʰɛp̚
	salty	what	make	people	pain
	'What is salty that can cause pain?'				
	Pre-critical	Critical	Spillover		
	เค็ม	ฉีด	ยา		
	kʰem	tɕʰhɛːt̚	jaː		
	salty.PARA	inject	medicine		
	'Salty-inject medicine/ syringe.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA05	งวง	อะไร	อยู่	บน	เตียง
	ŋuaŋ	ʔa.raj	jüː	bon	tiaŋ
	trunk	what	be	on	bed
	'What trunk is on bed?'				
	Pre-critical	Critical	Spillover		
	งวง	จิ้ง	เลย		
	ŋuaŋ	tɕaŋ	lɛːj		
	trunk.PARA	much	PRT		
	'Trunk very much/ sleepy very much.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA06	ถั่ว	อะไร	ได้	คะแนน	
	tʰu̯a	ʔà.raj	dáj	kʰá	nɛːn
	nut	what	get	point	DECOMP
	‘Which nut can earn points?’				
	Pre-critical	Critical	Spillover		
	ถั่ว	ต้ม	ครบ		
	tʰu̯a	tóm	kʰráp		
	beans.PARA	boiled.PARA	PRT		
	‘Beans-boiled/ correct answer.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA07	ปลวก	อะไร	ต้อง	ทาน	ยา
	plúak	ʔá.raj	tɕiːŋ	tʰaːn	jaː
	termite.PARA	what	must	take	medicine
	‘Which termite must take medicines?’				
	Pre-critical	Critical	Spillover		
	ปลวก	หัว	จิ้ง		
	plúak	hǎa	tɕaŋ		
	termite.PARA	head	PRT		
	‘Termite-head very much/ headache.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA08	ถุง	อะไร	มัก	มี	ห่วง
	tʰŋ̌	ʔà.raj	mák	miː	hŋ̌a
	bag.PARA	what	often	have	hole
	‘What bag often has holes?’				
	Pre-critical	Critical	Spillover		
	ถุง	บ้าน	ยัง		
	tʰŋ̌	bāːn	ja		
	bag.PARA	home	yet		
	‘Bag-home yet?/ arrived home yet?’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA09	ท้อ	อะไร	ต้อง	ระ	วัง
	tʰɔː	ʔà.raj	tɔːŋ	rà	waŋ
	discouragement	what	must	careful	DECOMP
	‘What kind of discouragement must people be careful?’				
	Pre-critical	Critical	Spillover		
	ท้อ	ระ	บาย		
	tʰɔː	rà	baːj		
	discouragement.PARA	drainage	DECOMP		
	‘Discouragement-drainage/ drainage ditch.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA10	เงา	อะไร	มี	คน	เดียว
	ŋaw	ʔà.raj	miː	kʰon	diaw
	shadow	what	have	person	one
	‘What shadow has only one person?’				
	Pre-critical	Critical	Spillover		
	เงา	จั่ง	เลย		
	ŋaw	tɕaŋ	lɛːj		
	shadow.PARA	much	PRT		
	‘Shadow-much/ so lonely.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA11	ปลา	อะไร	อยาก	กลับ	บ้าน
	plaː	ʔà.raj	jàːkʰ	klàpʰ	bâːn
	fish	what	want	return	home
	‘What fish wants to go back home?’				
	Pre-critical	Critical	Spillover		
	ปลา	ชุม	ต่อ		
	plaː	tɕʰum	tɔː		
	fish.PARA	meeting	continued		
	‘fish-meeting next/ has a meeting next.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA12	เขา	อะไร	มี	สอง	ขา
	kʰǎw	ʔà.raj	miː	sɔ̌ːŋ	kʰǎː
	mount	what	have	two	legs
	‘What mount has two legs?’				
	Pre-critical	Critical	Spillover		
	เขา	แมว	ครึ่ง		
	kʰǎw	mɛːw	kʰràpʰ		
	mount.PARA	owl	PRT		
	‘Mount-owl/ an owl.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA13	เป่า	อะไร	คน	เกรง	ขาม
	pāw	ʔā.raj	kʰon	kreːŋ	kʰǎːm
	blow	what	human	frightened	frightened
	‘What is blown that makes people frightened?’				
	Pre-critical	Critical	Spillover		
	เป่า	ปุ่น	จิ้น		
	pāw	bún	tɕin		
	blow.PARA	Bao Zheng	DECOMP		
	‘Blow-Bao Zheng/ Bao Zheng.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA14	ปู	อะไร	ต้อง	มี	กลิ่น
	puː	ʔà.raj	tɕiːŋ	miː	klin
	crab	what	must	have	smell
	‘What crab must have some smell?’				
	Pre-critical	Critical	Spillover		
	ปู	ร้า	ไจ		
	puː	ràː	ŋaj		
	crab.PARA	fermented	PRT		
	‘Crab-fermented/ fermented fish.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA15	มืด	อะไร	เห็น	ชัด	เจน
	mɯ̌iːtʰ	ʔà.raj	hě̌n	tɕʰatʰ	tɕeːn
	dark	what	see	clear	EXPR
	‘What is dark but can be clearly seen?’				
	Pre-critical	Critical	Spillover		
	มืด	อี	โต้		
	mɯ̌iːtʰ	ʔiː	tòː		
	dark.PARA	cleaver	DECOMP		
	‘Dark-cleaver/ a cleaver.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA16	มุง	อะไร	ไม่	เคย	เห็น
	muŋ	ʔà.raj	māj	kʰɯːj	hě̃n
	gather around	what	NEG	never	see
	'What is gathered around but is never seen?'				
	Pre-critical	Critical	Spillover		
	มุง	เป็น	ใคร		
	muŋ	pen	kʰraj		
	gather.PARA	be	who		
	'Gather-who?/ Who are you?'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA17	ยิ้ม	อะไร	คน	วิ่ง	หนี
	jɪm	ʔà.raj	kʰon	wiŋ	nǎi:
	smile	what	people	run	flee
	'What (kind of) smile does people run away from?'				
	Pre-critical	Critical	Spillover		
	ยิ้ม	เงิน	หน้อย		
	jɪm	ŋaːn	nɔj		
	smile.PARA	money	PRT		
	'Smile-money, please/ Can I borrow some money, please?'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA18	ร่อง	อะไร	มี	หลาก	สี
	rɔ̌ːŋ	ʔà.raj	miː	làːkʰ	sǐː
	trench	what	have	many	color
	‘What trench has many colors?’				
	Pre-critical	Critical	Spillover		
	ร่อง	เท้า	แตะ		
	rɔ̌ːŋ	tʰáːw	tɛ		
	trench.PARA	sandal	DECOMP		
	‘Trench.sandal/ sandal.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA19	สร้าง	อะไร	ทำ	งาน	ได้
	sǎːŋ	ʔà.raj	tʰam	ŋaːn	dāj
	build	what	do	work	able
	'What can build something that can do some jobs?'				
	Pre-critical	Critical	Spillover		
	สร้าง	เมา	แล้ว		
	sǎːŋ	maw	lɛːw		
	build.PARA	drunk	already		
	'build-drunk already/ Sober now.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-PA20	หลับ	อะไร	ห้าม	คน	รู้
	lápʰ	ʔà.raj	hǎːm	kʰon	rúː
	sleep	what	prohibit	human	know
	‘What is asleep that people must not know?’				
	Pre-critical	Critical	Spillover		
	หลับ	สุด	ยอด		
	lápʰ	sútʰ	jɔ̌ːtʰ		
	sleep.PARA	extreme	top		
	‘Sleep-top/ top secret.’				

Hahaphony

ID	Question1	Question2	Question3	Question4	Question5
1B-HA01	กรุง	อะไร	ห้าม	คน	เข้า
	kruŋ	ʔà.raj	hǎːm	kʰon	kʰǎw
	city	what	prohibit	people	enter
	‘What city prohibits people to enter?’				
	Pre-critical	Critical	Spillover		
	กรุง	แจ	ลือค		
	kruŋ	tɕɛː	lɔkʰ		
	pseudo.key.HAHA	DECOMP	lock		
‘A key lock.’					
ID	Question1	Question2	Question3	Question4	Question5
1B-HA02	กา	อะไร	วาด	เขียน	ได้
	kaː	ʔà.raj	wǎːtʰ	kʰǎn	dáj
	crow	what	draw	write	able
	‘Which crow can draw and write?’				
	Pre-critical	Critical	Spillover		
	กา	ดาษ	เปล้า		
	kaː	dǎːtʰ	plǎw		
	pseudo.paper.HAHA	DECOMP	blank		
‘Blank paper.’					
ID	Question1	Question2	Question3	Question4	Question5
1B-HA03	ปลา	อะไร	เกิด	ไป	แล้ว
	plaː	ʔà.raj	kʰɛːtʰ	paj	lɛːw
	fish	what	be born	go	already
	‘What fish has already been born?’				
	Pre-critical	Critical	Spillover		
	ปลา	หวัด	ศาสตร์		
	plaː	wǎtʰ	sǎːtʰ		
	pseudo.history.HAHA	DECOMP	DECOMP		
‘History.’					
ID	Question1	Question2	Question3	Question4	Question5
1B-HA04	พระ	อะไร	อด	ทน	เก่ง
	pʰrá	ʔà.raj	ʔòtʰ	tʰon	kèŋ
	monk	what	restrain from	bear	skillful
	‘Which monk can bear skillfully?’				
	Pre-critical	Critical	Spillover		
	พระ	ยา	ยาม		
	pʰrá	jaː	jaːm		
	pseudo.effortful.HAHA	DECOMP	DECOMP		
‘Effortful.’					

ID	Question1	Question2	Question3	Question4	Question5
1B-HA05	ม้า	อะไร	มัก	มี	พิษ
	máː	ʔà.raj	mákː	miː	pʰitː
	horse	what	often	have	venom
	‘What horse is venomous?’				
	Pre-critical	Critical	Spillover		
	ม้า	แลง	ป๋อง		
	máː	ɛːŋ	pɔŋ		
	pseudo.scorpion.HAHA	DECOMP	DECOMP		
	‘Scorpion.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA06	มา	อะไร	มัก	เปรี้ยว	จัด
	maː	ʔà.raj	mákː	priaw	tɕatː
	come	what	often	sour	very much
	‘What comes here that is so sour?’				
	Pre-critical	Critical	Spillover		
	มา	ขาม	ป๋อม		
	maː kʰǎːm pɔ̌ːm				
	pseudo.Indian gooseberry.HAHA	DECOMP	DECOMP		
	‘Indian gooseberry.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA07	รา	อะไร	น่า	กังวล	วล
	raː	ʔà.raj	nāː	kaŋ	won
	mold	what	likely	worry	DECOMP
	'What mold is worrying?'				
	Pre-critical	Critical	Spillover		
	รา	วัง	นะ		
	raː	waŋ	ná		
	pseudo.be careful.HAHA	DECOMP	DECOMP		
	'Be careful.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA08	สระ	อะไร	ทุก	คน	นั่ง
	sà	ʔà.raj	tʰúkː	kʰon	niŋ
	pool	what	every	person	stay still
	‘What pool makes every person stay still?’				
	Pre-critical	Critical	Spillover		
	สระ	กต	จิต		
	sà	kòtː	tɕit		
	pseudo.hypnotize.HAHA	DECOMP	DECOMP		
	‘Hypnotize.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA09	กำ	อะไร	อยู่	ใกล้	ใกล้
	kam	ʔà.raj	jùː	klâj	klâj
	hold	what	be	near	near
	‘What is held that is close by?’				
	Pre-critical	Critical	Spillover		
	กำ	ลั้ง	ถึง		
	kam	laŋ	tʰăŋ		
	pseudo.almost there.HAHA	DECOMP	DECOMP		
	‘Almost there.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA10	คำ	อะไร	ไม่	มี	คำ
	kʰam	ʔa.raj	mâj	miː	kʰam
	word	what	NEG	have	word
	‘What word does not have words?’				
	Pre-critical	Critical	Spillover		
	คำ	นวน	เลข		
	kʰam nuan lèːkʰ				
	pseudo.calculate.HAHA	DECOMP	DECOMP		
	‘Calculate.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA11	ทัก	อะไร	ใคร	ก็	มี
	tʰakʰ	ʔa.raj	kʰraj	kʷiː	miː
	greet	what	who	PRT	have
	‘What can greet that anyone has?’				
	Pre-critical	Critical	Spillover		
	ทัก	ซะ	ไง		
	tʰakʰ	sà	ŋaj		
	pseudo.skill.HAHA	DECOMP	DECOMP		
	‘A skill.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA12	นา	อะไร	ปลูก	ไม่	ได้
	naː	ʔa.raj	plùːkʰ	mâj	dâj
	field	what	plant	NEG	able
	'What filed cannot be planted with anything?'				
	Pre-critical	Critical	Spillover		
	นา	ฬี	กา		
	naː	lí	kaː		
	pseudo.clock.HAHA	DECOMP	DECOMP		
	'A clock.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA13	รัง	อะไร	คน	วิ่ง	หนี
	raŋ	ʔa.raj	kʰon	wiŋ	nǎiː
	nest	what	people	run	flee
	‘What nest makes people run away?’				
	Pre-critical	Critical	Spillover		
	รัง	สี่	จะ		
	raŋ	sǎiː	tɕā		
	pseudo.ray.HAHA	DECOMP	PRT		
	‘A ray.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA14	จำ	อะไร	ต้อง	ห้าม	ลืม
	tɕam	ʔà.raj	tɕiːŋ	hâːm	lɛwːm
	remember	what	must	prohibit	forget
	‘What is remembered that should not be forgot?’				
	Pre-critical	Critical	Spillover		
	จำ	นอง	บ้าน		
	tɕam	nɔːŋ	bâːn		
	pseudo.mortgage.HAHA	DECOMP	house		
	‘A house mortgage.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA15	ลำ	อะไร	ไม่	เป็น	ปล้อง
	lam	ʔà.raj	mâj	pen	pǎiːŋ
	trunk	what	NEG	be	stem
	‘What trunk has no stems?’				
	Pre-critical	Critical	Spillover		
	ลำ	โพง	เง		
	lam	pʰoːŋ	ŋaj		
	pseudo.speaker.HAHA	DECOMP	PRT		
	‘A speaker.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA16	สับ	อะไร	ยัง	เป็น	ลูก
	sàpː	ʔà.raj	jaŋ	pen	lúːkː
	chop	what	still	be	whole
	‘What is chopped but still				
	Pre-critical	Critical	Spillover		
	สับ	ปะ	รด		
	sàpː	pà	rótː		
	pseudo.pineapple.HAHA	DECOMP	DECOMP		
	‘Pineapple.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA17	ขา	อะไร	โค้ง	ตลอด	ครับ
	kʰǎː	ʔǎ.raj	kʰoːŋ	tà.lɔːt	kʰrǎp
	leg	what	bow	always	PRT
	‘What leg always bends?’				
	Pre-critical	Critical	Spillover		
	ขา	รี	วะ		
	kʰǎː	rǎ	wá		
	pseudo.bow.HAHA	DECOMP	DECOMP		
	‘Bow.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA18	อา	อะไร	ไม่	ใช่	ญาติ
	ʔaː	ʔǎ.raj	māj	tɕʰāj	jǎːtʰ
	Uncle	what	NEG	be	relative
	‘Which uncle is not a relative?’				
	Pre-critical	Critical	Spillover		
	อา	จารย์	ขา		
	ʔaː	tɕʰaːn	kʰǎː		
	pseudo.teacher.HAHA	DECOMP	PRT		
	‘Teacher.’				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA19	อา	อะไร	ชอบ	เสียง	ดัง
	ʔaː	ʔǎ.raj	tɕʰǎːp	sǎŋ	daŋ
	Uncle	what	like	sound	loud
	'Which uncle likes to make noise?'				
	Pre-critical	Critical	Spillover		
	อา	ละ	वाद		
	ʔaː	lá	wǎːt		
	pseudo.act madly.HAHA	DECOMP	DECOMP		
	'Act madly.'				

ID	Question1	Question2	Question3	Question4	Question5
1B-HA20	อ้า	อะไร	คน	ร้อง	ไห้
	ʔam	ʔa.raj	kʰon	rɔːŋ	hâj
	tease	what	people	cry	DECOMP
	‘What teases someone that can make that person cry?’				
	Pre-critical	Critical	Spillover		
	อ้า	ลา	แล้ว		
	ʔam	laː	lɛːw		
	pseudo.goodbye.HAHA	DECOMP	already		
	‘Goodbye.’				