IDEAS

Journal on Language Teaching and Learning, Linguistics and Literature

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

Volume 14, Number 2, December 2026
pp. 9711 - 9729

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Issued by English study program of UIN Palopo

Natural Semantic Metalanguage in the Basic Color Lexicon of the Banyumasan Dialect of Javanese (Ngapak)

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Article Info

Received: 2026-10-31
Revised: 2026-11-11
Accepted: 2026-11-17

Keywords:
Natural Semantic Metalanguage;
basic color lexicon;
Banyumasan Javanese;
Ngapak;
Culture

DOI:
10.24256/ideas. v14i2.13070

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Abstract

This study aims to identify basic color lexicons in the Banyumasan (Ngapak) dialect of Javanese, analyze their semantic components using the Natural Semantic Metalanguage (NSM) approach, and examine the relationship between color meanings and speakers' perceptual experiences, natural environment, and sociocultural context. The study employed a descriptive qualitative approach within an ethnosemantic perspective. The data were obtained through online interviews and question-and-answer sessions with five native speakers of the Banyumasan dialect. Elicitation techniques were used to assist speakers in identifying and describing color categories based on visual stimuli. Data were analyzed using the principles of NSM through semantic primes, semantic molecules, and reductive paraphrase. The findings indicate that six basic color lexicons were consistently identified by the informants: abang 'red', putih 'white', ireng 'black', ijo 'green', kuning 'yellow', and biru 'blue'. The analysis demonstrates that the meanings of these color lexicons are not limited to visual categories but also involve experiences of seeing, recognition of visual characteristics, knowledge, and the linguistic labeling of perceived objects. Semantic molecules reflect concrete experiences associated with environmental objects namely getih (blood), budin (cassava), areng (charcoal), godhong (leaf), kunir (turmeric), and banyu segara (sea water) which function as representative references that assist speakers in recognizing color categories. The natural environment provides perceptual experiences that shape the conceptualization of color, whereas cultural contexts provide backgrounds for the use and association of colors in Banyumasan community life. The study demonstrates that the NSM approach explains basic color lexicons in a non-circular manner while revealing the relationship between language, perception, environment, and speakers' cultural experiences.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

1. Introduction

Color is one of the semantic domains that demonstrates a close relationship between human perception, language, and culture. Biologically, humans possess the ability to distinguish various color stimuli through the visual system. However, the ways in which different linguistic communities categorize, name, and describe colors are not necessarily identical. Although color exists as a continuum in the visual domain, languages organize this perceptual experience into specific lexical categories. Lindsey and Brown (2021) explain that color perception involves considerable perceptual variation, whereas language organizes this experience through lexical categories whose number and boundaries may differ across languages. Therefore, color lexicons are not merely related to the human ability to perceive colors but also reflect how linguistic communities conceptualize visual experiences through their respective linguistic systems.

Research on color terminology has traditionally been associated with the concept of basic color terms. Berlin and Kay (1969) demonstrated that languages across the world exhibit certain universal tendencies in their color categorization systems. Nevertheless, subsequent studies have shown that such universality does not mean that all languages possess identical color systems. Regier et al. (2015) explain that color categorization may be influenced by the interaction between human perceptual structures and the communicative needs of linguistic communities. Similarly, Abbott et al. (2016) demonstrate that focal colors, namely colors considered the most representative examples of particular categories, exhibit cross-linguistic tendencies while retaining variations within individual language systems. Bimler and Uusküla (2017) further emphasize that investigations of basic color terms should consider the relationship between color naming, category structure, and speakers' perceptual experiences. These perspectives indicate that color terminology needs to be examined by considering both universal characteristics of human perception and the distinctive features of individual languages.

Beyond perceptual differences, color categorization is also related to speakers' experiences and the environments in which they live. Witzel and Gegenfurtner (2018) explain that color categorization involves human perceptual mechanisms, although individual experiences and categorization processes may influence how colors are grouped. Witzel (2019) further argues that color categories cannot be understood as entirely universal systems because variations occur in the formation of color boundaries and category structures. Raffaelli et al. (2019) demonstrate that color lexicalization may develop through different linguistic processes, resulting in the emergence of more specific color terms in particular languages. Meanwhile, Conway et al. (2020) show that color-naming systems are also related to speakers' communicative needs in conveying visual information. These findings establish color as an important semantic domain for investigating the interaction between perception, linguistic categorization, everyday experience, and cultural environments.

From a semantic perspective, color is not merely understood as a physical property of an object but also as a concept whose meaning develops through human experience. Wierzbicka (2015) explains that the meanings of color terms can be examined through human experiences of the world and concepts closely associated with everyday life. This perspective is particularly relevant to regional languages because a color term may embody a particular way of conceptualizing visual experiences that cannot always be

explained solely through physical parameters such as wavelength, hue, or saturation. Consequently, examining color lexicons requires attention not only to their linguistic forms but also to how speakers understand and describe colors through familiar objects, natural phenomena, and everyday activities.

One theoretical framework that enables such meanings to be examined systematically is Natural Semantic Metalanguage (NSM). NSM provides an approach to explaining complex lexical meanings through a set of semantic primes, which are considered simple and universal meanings applicable across languages. Wierzbicka (2015) positions these simple concepts as the foundation for explaining more complex meanings, while Goddard (2018) explains that NSM employs semantic explications to decompose lexical meanings into simpler and more transparent components.

Goddard and Wierzbicka (2018) further emphasize that semantic primes enable researchers to formulate meanings without relying excessively on technical terminology or circular definitions derived from particular languages. Levisen (2019) also highlights the importance of cultural dimensions in semantic analysis because lexical meanings may represent how a particular community understands its experiences. In the study of color terminology, NSM therefore provides an analytical basis for identifying the semantic components and experiential associations underlying the meanings of color lexicons.

The application of NSM is particularly relevant to regional languages characterized by distinctive lexical and cultural features. An explanation based solely on Indonesian or English equivalents may not fully represent the conceptualizations expressed by native speakers. Goddard (2018) explains that NSM explications seek to address this issue by using simpler semantic elements that can be applied across languages. Similarly, Goddard and Wierzbicka (2018) emphasize that cross-linguistic semantic research needs to examine how meanings are constructed within the language under investigation rather than merely identifying direct equivalents in other languages. This principle is important in color semantics because color categories may share similar lexical equivalents across languages while exhibiting different reference objects and experiential associations.

In the context of Javanese, color terminology provides an interesting domain for examining such linguistic and semantic variations. Javanese is spoken across different geographical regions and exhibits several dialectal characteristics. One of these varieties is Banyumasan Javanese, popularly known as Ngapak. Banyumasan possesses distinctive phonological, morphological, syntactic, and lexical characteristics that distinguish it from Standard Javanese. These characteristics provide opportunities for investigating how speakers of a particular regional variety organize and express their experiences through language. Color terminology is particularly relevant to this investigation because, although visual experiences may be shared universally, their lexical representations and associated reference objects may vary across linguistic communities.

Previous studies in Indonesia have demonstrated the potential of semantic approaches, particularly NSM, for investigating color meanings in regional languages. Yulianti (2016) found that Sundanese color vocabulary is associated with natural conditions and exhibits particular semantic gradations. Wardana and Mulyadi (2022) examined basic and secondary color terms in Indonesian and demonstrated that color explications may involve semantic anchors associated with concrete experiences and natural elements. Amalia and Mulyadi (2022) investigated color concepts in Batak Mandailing through semantic components and associations with natural elements.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

Aryasuari and Ariana (2022) applied NSM to semantic research on Balinese, while Ernita Daulay and Mulyadi (2022) employed the approach in their study of the Mandailing language. Talaohu and Hamka (2023) also demonstrated the application of semantic approaches to investigating color concepts in Pelauw.

More specifically, Ningrum et al. (2024), in their study Basic Colors in Javanese and Indonesian Languages: Natural Semantic Metalanguage Theory, identified ten basic color terms in Javanese: ireng (black), putih (white), abang (red), ijo (green), kuning (yellow), biru (blue), soklat (brown), wungu (purple), jambon (pink), and klawu (gray). Their study employed dictionary references and linguistic corpora, including the LCC Javanese corpus, to identify color terms and formulate their semantic explications. Collectively, these studies demonstrate that color terminology provides an important basis for examining the relationship between language, perception, and cultural experience.

Although previous studies have provided valuable insights into color terminology and its semantic representation, the conceptualization of basic color lexicons in specific regional varieties of Javanese, particularly Banyumasan, remains insufficiently documented through direct evidence from native speakers. Ningrum et al. (2024) provide an important foundation for understanding Javanese color terminology; however, their study primarily focuses on lexical identification and semantic description using documentary and corpus-based sources. The present study extends this investigation by examining color lexicons through interviews and visual elicitation involving five native Banyumasan speakers. This speaker-oriented approach makes it possible to document not only the lexical forms but also the reference objects and semantic associations that participants use to explain color meanings based on their linguistic knowledge and everyday experiences.

The findings of the present study identify six color lexicons consistently recognized by the five participants: abang (red), putih (white), ireng (black), ijo (green), kuning (yellow), and biru (blue). These terms overlap with six of the ten basic color terms identified by Ningrum et al. (2024). However, the reference objects associated with several color terms show variations. The Banyumasan participants associate abang with getih (blood), putih with budin (cassava), ireng with areng (charcoal), ijo with godhong (leaf), kuning with kunir (turmeric), and biru with banyu segara (sea water). A comparison with Ningrum et al. (2024) reveals similarities in the associations of abang with blood and ireng with charcoal.

However, the present participants associate putih with cassava, whereas Ningrum et al. document references such as kencur, mrica, chicken eggs, the sky, and limestone. Similarly, the present study identifies turmeric as a reference for kuning, while Ningrum et al. report langseb and gold as Javanese references and classify turmeric as an Indonesian reference. For ijo, the present participants mention leaves generally, whereas Ningrum et al. provide more specific references, including banana shoots, spinach leaves, and leaf grasshoppers. For biru, the participants refer to sea water, while Ningrum et al. identify the sea and sky. These similarities and differences suggest that the selection of reference objects may vary according to speakers, data sources, and elicitation procedures. They should therefore not automatically be interpreted as evidence of categorical dialectal differences.

The difference in the number of identified color terms also requires careful interpretation. The six terms documented in this study represent the color lexicons consistently elicited from the five Banyumasan participants within the scope of this investigation. They do not establish that Banyumasan lacks the four additional terms (soklat, wungu, jambon, and klawu) identified by Ningrum et al. (2024). The identification of basic color terms may be influenced by lexical classification criteria, the sources of linguistic evidence, and the procedures used to elicit speakers' responses. Previous research situated in other Javanese cultural regions, including Malindra's (2011) investigation in Bantul, Yogyakarta, also provides an important background for understanding regional color terminology.

Nevertheless, findings from particular geographical settings should not be assumed to represent the entire diversity of Javanese varieties. Banyumasan therefore deserves separate empirical investigation through data obtained directly from its native speakers.

The contribution of the present study lies in extending the application of NSM to basic color lexicons in Banyumasan Javanese through an empirical, speaker-oriented investigation. Rather than claiming that NSM has never been applied to Javanese color terminology, this study focuses on how native Banyumasan speakers explain color meanings through semantic components and familiar reference objects. In the analysis, semantic primes such as SOMEONE, SOMETHING, SEE, KNOW, THINK, and SAY provide a basis for formulating semantic explications. The reference objects identified by participants, including blood, cassava, charcoal, leaves, turmeric, and sea water, are examined as semantic molecules that help explain the respective color meanings. Thus, the study connects lexical identification, speakers' perceptual experiences, reference-object associations, and NSM semantic explications within a specific regional language variety.

Based on the research background and previous studies, this study addresses three research questions: (1) What basic color lexicons are found in the Banyumasan dialect of Javanese? (2) What semantic components constitute the meanings of these basic color lexicons from the perspective of Natural Semantic Metalanguage? and (3) How are the perceptual experiences, natural environment, and sociocultural contexts of Banyumasan speakers reflected in the semantic explications of these color lexicons? Accordingly, the study aims to identify basic color lexicons, analyze their semantic components through NSM, and examine the relationship between lexical meanings and speakers' perceptual and experiential knowledge.

Theoretically, the study contributes to the development of NSM in regional language semantics. Empirically, it documents color terminology and its associated meanings from native Banyumasan speakers. Methodologically, it demonstrates the use of interviews and visual elicitation as complementary techniques for investigating lexical categorization and semantic conceptualization in a regional language.

2. Method

This study employed a qualitative descriptive approach with an ethnosemantic perspective to investigate the meanings and conceptualization of basic color lexicons in Banyumasan Javanese (Ngapak). The qualitative approach was selected because it enables researchers to understand meanings and speakers' experiences within particular contexts (Creswell & Poth, 2018; Merriam & Tisdell, 2016). The ethnosemantic

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

perspective was adopted to examine the relationship between language, culture, and the ways in which a linguistic community categorizes its experiences (Duranti, 2017; Senft, 2016). Natural Semantic Metalanguage (NSM) served as the primary analytical framework for explicating complex lexical meanings through semantic primes and reductive paraphrases (Goddard, 2018; Wierzbicka, 2021; Goddard & Wierzbicka, 2018). The conceptualization and categorization of color lexicons were also informed by research on color categorization and focal colors (Lindsey & Brown, 2021; Abbott et al., 2016).

The primary data consisted of basic color lexicons in Banyumasan Javanese, including their lexical forms, meanings, reference objects, and semantic characteristics as described by native speakers. The participants comprised five native Banyumasan speakers selected through purposive sampling. This sampling technique was considered appropriate because the study required participants with specific linguistic knowledge relevant to the research objectives (Palinkas et al., 2015). Participant selection considered their Banyumasan linguistic background, proficiency, familiarity with everyday vocabulary, and ability to identify, describe, and explain basic color terms using their own linguistic knowledge.

To establish the relevance of their linguistic backgrounds, participant profiles were documented based on age, place of origin, childhood language environment, current residence, frequency of Banyumasan use in everyday communication, and knowledge of other languages or Javanese regional varieties. Particular attention was given to whether participants had acquired and regularly used Banyumasan in their family and community environments. Their linguistic proficiency was assessed through preliminary conversations conducted in Banyumasan, while their knowledge of color terminology was examined through questions concerning the recognition, identification, description, and everyday use of basic color lexicons. These criteria were intended to ensure that participants could provide relevant linguistic information based on their own knowledge rather than relying exclusively on translated equivalents or dictionary definitions.

Data were collected through observation (metode simak), interviews (metode cakap), and visual elicitation. The observation method was used to identify color lexicons in spoken utterances and supplementary written sources, whereas the interview method was employed to obtain information about lexical meanings, reference objects, characteristics, and contexts of use. The interviews were conducted online using a semi-structured interview guide, which allowed the researcher to explore participants' knowledge while providing opportunities for clarification and further explanation (Kvale & Brinkmann, 2015; Archibald et al., 2019).

Visual elicitation was conducted using digital color representations presented individually to the participants. Each stimulus was shown without an accompanying color label to obtain spontaneous lexical responses. Participants were initially asked open-ended questions in Banyumasan, such as “Iki werna apa?” (What color is this?) and “Biasane werna kaya kene diarani apa?” (What is a color like this usually called?). These questions were intended to identify the lexical forms participants naturally used before introducing specific labels or examples.

Following the initial naming task, participants were asked to explain the characteristics of each identified color and mention familiar objects or natural phenomena associated with it. Questions such as “Biasane werna kaya kene ana ing

barang apa?" (What objects usually have this color?) and "Apa bedane werna iki karo werna liyane?" (How is this color different from other colors?) were used to explore their semantic associations and color distinctions. Participants were encouraged to provide examples based on their everyday experiences and local environments rather than relying on Indonesian translations or predetermined reference objects. The visual stimuli were subsequently presented again when necessary to clarify responses and examine the consistency of lexical identification. Repetition and contrastive questions were used to determine whether participants recognized the same lexical category across different presentations and could distinguish it from visually similar colors.

The interviews were conducted primarily in Banyumasan to maintain the natural linguistic context of the elicitation process. Indonesian was used only when clarification was necessary or when a participant required additional explanation. Because the interviews were conducted online, differences in screen resolution, display settings, brightness, and surrounding lighting conditions could potentially influence the visual presentation of colors. To maintain consistency, the researcher used the same digital color materials and presentation format for all participants. Nevertheless, differences in individual devices and viewing environments could not be completely eliminated. Therefore, the visual stimuli were treated as elicitation aids rather than precisely calibrated measurements of human color perception. The analysis focused primarily on participants' lexical identification, verbal descriptions, and semantic associations rather than establishing exact perceptual boundaries between color categories.

Written sources were used as supplementary data to examine lexical forms, spelling variations, and contexts of lexicon use. They supported the documentation of linguistic forms but were not treated as substitutes for primary data obtained from native speakers. The elicitation results were compared with interview transcripts and supporting evidence of lexical usage. Particular attention was given to distinguishing spontaneous color naming from explanations obtained through follow-up questions. Lexical forms and reference objects mentioned independently by participants were recorded separately from examples introduced or suggested during the interviews.

This distinction was important for identifying which lexical items and semantic associations originated from participants' own linguistic knowledge. The integration of interviews, visual elicitation, observation, and supplementary written evidence provided a basis for examining color lexicons within their linguistic and sociocultural contexts (Patton, 2015; Majid et al., 2018).

Ethical considerations were addressed throughout the data collection process. Before the interviews, participants were informed about the research objectives, the nature of their participation, the use of interview data, and the intended academic publication of the findings. Informed consent was obtained from all participants before the interviews and recording activities. Participation was voluntary, and the participants' identities were kept confidential in the presentation and publication of the results. Anonymized codes (P1–P5) were assigned to the participants, and identifiable personal information was excluded from the research report. Interview recordings and transcripts were used exclusively for research purposes and handled confidentially by the researcher.

Data analysis was conducted through several interconnected stages. First, the researcher identified and inventoried color lexicons obtained from interviews, visual elicitation, observation, and supplementary written sources. Second, the identified

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

lexicons were classified according to their color categories and contexts of use. Third, semantic components were identified based on participants' verbal explanations, reference objects, and contextual information. Fourth, the semantic components were formulated into semantic explications using NSM primes and reductive paraphrases. Fifth, the proposed explications were examined and refined by comparing them with the original participant responses and relevant theoretical concepts (Goddard, 2018; Wierzbicka, 2021). The resulting explications were also compared with previous studies of color terminology to identify similarities and differences in lexical meanings and semantic associations.

Data trustworthiness was established by comparing responses from the five native Banyumasan speakers with relevant written sources and examining the consistency of interview, observation, and visual elicitation data. The analytical process traced each color term from participants' original responses and associated objects to the identification of semantic components and the formulation of NSM explications. For example, the association of abang with getih (blood) was examined as supporting evidence for identifying its semantic characteristics. Differences in participants' responses were considered in relation to their explanations and available supporting evidence.

The concepts of basic color terms, color categorization, color perception, and ethnosemantics provided theoretical guidance for interpreting the findings, while the proposed meanings remained grounded primarily in the linguistic data. Triangulation was employed to enhance the credibility of the interpretations (Carter et al., 2014). The analytical findings were also confirmed with participants to ensure that the interpretations adequately reflected their understanding of the color lexicons.

Given the involvement of five purposively selected participants, the findings are interpreted as a focused qualitative account of color conceptualization among the participating Banyumasan speakers rather than a comprehensive representation of the entire Banyumasan-speaking population. Agreement among the participants provides evidence of shared lexical recognition within this particular group but does not establish that all Banyumasan speakers use or conceptualize color terms uniformly across different geographical and sociolinguistic settings. Accordingly, the study focuses on providing an in-depth description of semantic structures and conceptualization based on native speakers' knowledge rather than achieving statistical generalization.

3. Result

The analysis of interviews and question-and-answer sessions with five native speakers of the Banyumasan dialect of Javanese (Ngapak) identified six color lexicons that were consistently recognized by all participants: abang (red), putih (white), ireng (black), ijo (green), kuning (yellow), and biru (blue). The classification of these lexicons as basic color terms was based on three operational criteria: lexical independence, breadth of application, and semantic salience. Lexical independence refers to the use of a color term as an independent lexical item rather than as a context-dependent descriptive expression. Breadth of application concerns the ability of a term to describe colors across different objects and contexts, while semantic salience refers to its familiarity, recognizability, and spontaneous use in everyday communication.

The three criteria were examined through participants' lexical responses, explanations, and identification of colors during the elicitation process. The interviews also explored other color expressions to distinguish widely recognized color categories from more specific or context-dependent terms. Accordingly, the six identified lexicons represent the basic color terms consistently recognized within the scope of the five-speaker sample, rather than an exhaustive inventory of all color categories in Banyumasan.

Table 1. Basic Color Lexicons in the Banyumasan Dialect of Javanese

No.	Banyumasan Lexicon	Indonesian Equivalent	Semantic Anchor Identified by Speakers
1	Abang	Red	Getih (blood)
2	Putih	White	Budin (cassava)
3	Ireng	Black	Areng (charcoal)
4	Ijo	Green	Godhong (leaf)
5	Kuning	Yellow	Kunir (turmeric)
6	Biru	Blue	Banyu segara (seawater)

As presented in Table 1, each color lexicon is associated with a familiar object or natural reference identified by the participants. These associations provide preliminary evidence of how Banyumasan speakers recognize and explain color categories through their visual experiences. For example, abang is associated with getih (blood), ireng with areng (charcoal), and kuning with kunir (turmeric). Similarly, putih is associated with budin (cassava), ijo with godhong (leaf), and biru with banyu segara (seawater). These reference objects are important because they provide concrete points of reference through which speakers describe and distinguish color meanings.

The consistency of lexical recognition among the five participants was established by comparing their responses, explanations, and associated reference objects. The elicitation process distinguished spontaneous responses, in which participants independently mentioned color terms, from prompted responses obtained through follow-up questions and visual identification tasks. This distinction helped establish whether the identified lexicons originated from participants' existing linguistic knowledge or emerged during the clarification process. The six terms were recognized across the participants, although the specific explanations and reference objects could vary.

These findings indicate that color recognition in Banyumasan involves not only the identification of visual characteristics but also the use of familiar objects as semantic references. Nevertheless, the reference objects should not be interpreted as complete definitions of the color terms. Rather, they function as semantic anchors that help explain how participants conceptualize particular colors. Therefore, the identification of these objects provides the empirical foundation for the subsequent Natural Semantic Metalanguage (NSM) analysis, which examines the semantic components underlying each color lexicon through simpler and more transparent expressions.

The identification of six basic color lexicons and their associated reference objects provides the foundation for examining their semantic structures through Natural Semantic Metalanguage (NSM). In this framework, lexical meanings are explained through semantic primes and semantic molecules that represent simpler conceptual elements. The analysis focuses on how speakers recognize a particular color through visual experience

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

and relate it to familiar objects in their environment. The following discussion examines each lexicon based on the semantic associations identified during the interviews and the corresponding NSM explications.

4. Discussion

Basic Color Lexicons and Their Semantic Explications

Interviews with five native speakers of the Banyumasan dialect of Javanese revealed six consistently used basic color lexicons: abang 'red', putih 'white', ireng 'black', ijo 'green', kuning 'yellow', and biru 'blue'. The consistency of the five participants' responses indicates that these six lexicons form part of the speakers' lexical knowledge for identifying and distinguishing visual experiences. Nevertheless, from the perspective of Natural Semantic Metalanguage (NSM), providing equivalents such as abang 'red' or ijo 'green' cannot yet be considered a semantic explication, since terms such as 'red' and 'green' are themselves complex concepts. Therefore, the meanings of the six lexicons need to be described through simpler semantic components by employing semantic primes and semantic molecules.

Wierzbicka (1996, 2006, 2014, 2016) explains that complex meanings can be described through combinations of semantic primes, which are fundamental concepts that can be used to construct semantic paraphrases without relying on other complex terms. In the development of NSM theory, the concept of semantic molecules has also been employed to explain concepts that cannot be directly reduced to semantic primes alone. Goddard (2018) emphasizes that semantic molecules are relatively complex concepts that can nevertheless be incorporated into explications as components for constructing more concrete scenarios.

In the analysis of color, distinguishing between semantic primes and semantic molecules is important because color is a perceptual concept that cannot be adequately explained merely by using other color labels. Semantic primes such as someone, something, see, know, think, and say can be used to describe basic human experiences of seeing and recognizing things. Meanwhile, concrete concepts such as blood, fire, leaves, grass, or the sky can function as semantic molecules when they genuinely occur in the speakers' experiences and responses. Thus, semantic molecules serve as a link between basic semantic components and speakers' concrete experiences of color. These are semantic explication of the Banyumasan color lexicons:

a. Abang (Red)

The lexicon abang was recognized by all five participants and associated with blood (getih). Based on these responses, [M] getih is proposed as a semantic molecule representing a familiar reference for the recognition of this color category. Its semantic explication is formulated as follows:

> Someone can see something.
> Someone can think about this thing:
>
> "This thing is like [M] getih."
> When someone sees something like this, this someone can know that it is like this.

This explication connects abang with the participants' visual experience of blood without defining the lexicon through its English equivalent, red.

b. Putih (White)

The lexicon putih was consistently identified by all participants and associated with cassava (budin). In this analysis, [M] budin is proposed as a semantic molecule because it represents a familiar object used by participants to explain this color category. Its semantic explication is:

Someone can see something.
Someone can think about this thing:

"This thing is like [M] budin."
When someone sees something like this, this someone can know that it is like this.

The association with cassava illustrates how everyday objects provide perceptual references for understanding putih without treating the object itself as the complete meaning of the lexicon.

c. Ireng (Black)

The lexicon ireng was identified by all five participants and associated with charcoal (areng). Accordingly, [M] areng is proposed as a semantic molecule representing a familiar reference in the participants' understanding of this color category. Its semantic explication is:

Someone can see something.
Someone can think about this thing:

"This thing is like [M] areng."
When someone sees something like this, this someone can know that it is like this.

This explication emphasizes the association between ireng and the visual experience of charcoal rather than relying on the circular definition of ireng as black.

d. Ijo (Green)

The lexicon ijo was consistently recognized by the five participants and associated with leaves (godhong). The reference to leaves provides an everyday natural example for understanding this color category. Therefore, [M] godhong is proposed as a semantic molecule in its explication:

Someone can see something.
Someone can think about this thing:

"This thing is like [M] godhong."
When someone sees something like this, this someone can know that it is like this.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

This association demonstrates the role of natural environmental experiences in the participants' recognition of ijo.

e. Kuning (Yellow)

The lexicon kuning was identified by all five participants, who associated it with turmeric (kunir). In this context, [M] kunir is proposed as a semantic molecule because it provides a familiar referential example for understanding this color category. Its semantic explication is:

> Someone can see something.
> Someone can think about this thing:
>
> "This thing is like [M] kunir."
> When someone sees something like this, this someone can know that it is like this.

The association with turmeric connects the meaning of kuning with an object encountered in everyday life and provides an experiential basis for its semantic interpretation.

f. Biru (Blue)

The lexicon biru was consistently recognized by all five participants and associated with seawater (banyu segara). This association provides a natural reference through which participants explain their recognition of this color category. Accordingly, [M] banyu segara is proposed as a semantic molecule in the following explication:

> Someone can see something.
> Someone can think about this thing:
>
> "This thing is like [M] banyu segara."
> When someone sees something like this, this someone can know that it is like this.

This explication illustrates the relationship between biru and the participants' visual experiences of the natural environment.

Overall, the six semantic explications demonstrate that Banyumasan color lexicons are associated with different familiar referential objects. The proposed semantic molecules [M] getih, budin, areng, godhong, kunir, and banyu segara provide the empirical basis for distinguishing the six lexical categories without using their English equivalents as definitions. The analysis therefore highlights the contribution of visual perception and everyday experience to color recognition among Banyumasan speakers. However, these molecules represent proposed reference concepts based on the interview data, rather than universal definitions of the respective color terms.

Natural Prototypes and Semantic Molecules

The relationship between color and natural objects in the research data can be examined through the concept of prototypes. Rosch (1978) explains that members of a category may differ in their degree of representativeness, with certain examples being

perceived as more representative than others. Taylor (2015) similarly emphasizes the role of speakers' experience and knowledge in the organization of linguistic categories. In this study, however, the repeated mention of an object was treated as evidence of a possible association rather than sufficient proof that the object was a prototype. Candidate prototypes were considered in relation to the consistency of participants' responses, the frequency with which an object was mentioned, and whether participants regarded it as a representative example of the relevant color. The analysis also needed to consider whether the association emerged spontaneously or in response to a researcher's prompt, as well as whether participants mentioned alternative examples.

On this basis, godhong (leaves) for ijo (green), banyu segara (seawater) for biru (blue), and the other objects associated with the six color lexicons were treated as candidate prototypes, pending further validation. In particular, the visual properties of variable referents need to be specified: for budin (cassava), the analysis must identify whether participants referred to its peeled flesh, skin, or another part; for banyu segara, it must clarify the conditions under which the water appeared blue, such as its surface, depth, or surrounding light. Without this information and evidence from alternative exemplars, these associations cannot be regarded as definitive prototypes.

Prototypes must also be distinguished from semantic molecules. A prototype is a representative example of a category, whereas a semantic molecule is a concept that functions as a component in the construction of a semantic explication. As discussed by Goddard (2007), semantic molecules are not simply objects associated with a particular meaning; their status depends on their role in semantic analysis and their capacity to be explicated independently. Accordingly, the objects identified in this study—getih (blood), budin (cassava), areng (charcoal), godhong (leaves), kunir (turmeric), and banyu segara (seawater)—should initially be regarded as candidate referential examples, rather than established semantic molecules.

To establish their status as molecules, each concept would need to be independently explicated and its contribution to the meaning of the corresponding color lexicon demonstrated. For example, the analysis would need to explain which properties of godhong are relevant to the proposed explication of ijo, rather than simply inserting the word godhong into the explication. Therefore, the present study uses these objects primarily to describe participants' reported associations, while their status as semantic molecules remains provisional until supported by independent semantic analysis.

The relationship between color lexicons and the environment further suggests that ecological experience may contribute to speakers' color conceptualization. Wierzbicka (2014, 2016) emphasizes the importance of human experience in understanding linguistic concepts, including those related to perception. In the Banyumasan context, plants, soil, water, food, and other familiar objects provide visual experiences through which speakers may recognize and describe colors. Nevertheless, these environmental references should not be interpreted as the origins of particular color meanings.

Rather, they represent possible experiential points of reference whose relevance must be established through participants' descriptions and comparisons. The analysis therefore distinguishes between the color category itself, the objects participants use to illustrate that category, and the semantic components that may be incorporated into an NSM explication. This distinction prevents the researcher from treating a frequently

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

mentioned object as an established prototype or semantic molecule without sufficient empirical and semantic evidence.

In addition to their perceptual dimensions, color lexicons may also be associated with the cultural experiences of a speech community. Duranti (2017) explains that language is embedded in the social practices and cultural life of its speakers, while Evans (2019) highlights the relationship between linguistic meaning and the ways in which humans organize their experiences through language. In this study, the cultural dimension was examined through the participants' accounts of the use and interpretation of the Banyumasan color lexicons abang, putih, ireng, ijo, kuning, and biru. The interview data provide a basis for identifying how participants relate these lexicons to objects and experiences in their everyday lives.

However, cultural interpretations should only be established when supported by specific participant accounts, including the relevant expression, speaker identification, and situational context. Therefore, references to clothing, food, agricultural activities, arts, ceremonies, traditional objects, or social practices should not be generalized unless such associations are explicitly documented in the interview data. This distinction is important because cultural associations may accompany the use of a color lexicon without necessarily forming part of its lexical meaning. Furthermore, associations reported by individual participants should be distinguished from patterns shared by several or all participants.

From an ethnos mantic perspective, the relationship between language, the environment, and culture can be examined through the ways speakers describe and interpret their experiences. Natural objects may provide visual points of reference for color recognition, while cultural and social experiences may shape the contexts in which color lexicons are used. In this study, the associations identified through interviews are treated as evidence of participants' reported experiences rather than proof that environmental conditions caused particular color categories to develop or persist. The analysis therefore distinguishes three dimensions: the lexical meanings of the six color terms, the natural objects participants mentioned as visual references, and the cultural contexts documented in their accounts.

This distinction is consistent with the NSM approach, which seeks to describe meaning through carefully formulated semantic components rather than relying solely on lexical equivalents or broad cultural interpretations. Consequently, the findings are limited to the patterns supported by the five participants' responses and do not claim to represent all Banyumasan speakers or the entire cultural system of the Banyumasan community.

General Semantic Structure of Banyumasan Basic Color Lexicons

Based on the overall data, the six basic Banyumasan color lexicons can be described through a semantic structure comprising several general components: the experience of seeing, recognition of the object being seen, knowledge of its visual characteristics, differentiation from other categories, and the assignment of a linguistic label. In general, this structure can be represented through the following scenario: someone sees something; this thing looks a certain way; someone knows that this thing looks this way; someone can think about something like this; and someone can say that this thing has a particular color.

This general scenario is further specified through semantic molecules derived from the participants' concrete experiences. Thus, abang is associated with getih (blood) as a concrete reference for abang; putih with budin (cassava) as a reference for putih; ireng with areng (charcoal) as a concrete reference for ireng; ijo with godhong (leaves) as a reference for ijo; kuning with kunir (turmeric) as a concrete reference for kuning; and biru with banyu segara (seawater) as a reference for biru. All these associations are grounded in the interview data.

The use of semantic molecules in the explication of the six color terms offers a theoretical advantage because it enables the researcher to avoid circular definitions. Analyses that merely explain abang as 'red', ijo as 'green', or biru as 'blue' do not yet reveal the underlying semantic structures. Through NSM, color concepts can be explained by employing semantic primes as basic analytical tools and semantic molecules as concrete concepts that help construct semantic scenarios. Accordingly, semantic primes function as the basic elements for explaining experience, whereas semantic molecules provide a link to concrete experiences that are familiar to the speakers.

Overall, the findings indicate that the six basic Banyumasan color lexicons are not merely a list of color names but constitute part of a conceptual system connecting human perception with the environment and culture. The lexicons abang, putih, ireng, ijo, kuning, and biru are used to categorize visual experiences, while experiences of the natural environment provide objects that function as prototypes or semantic molecules. At the same time, cultural contexts assign particular functions and associations to colors in the speakers' social lives.

Therefore, an NSM analysis employing semantic primes and semantic molecules makes it possible to describe the semantic structures of color more comprehensively without separating language from the ecological experiences and cultural practices of the Banyumasan community. These findings also demonstrate that investigating basic color lexicons through NSM provides a means of documenting Banyumasan speakers' semantic knowledge as shaped by the relationship among language, perception, the natural environment, and cultural experience.

5. Conclusion

Based on the findings of this study on Natural Semantic Metalanguage (NSM) in the basic color lexicons of the Banyumasan dialect of Javanese (Ngapak), six basic color lexicons were identified and consistently recognized by five native speakers: abang 'red', putih 'white', ireng 'black', ijo 'green', kuning 'yellow', and biru 'blue'. These six lexicons form part of the speakers' lexical system for recognizing and distinguishing visual experiences of color. The NSM analysis indicates that color meanings are associated with the experiences of seeing, recognizing visual characteristics, knowing, distinguishing, and assigning labels to things.

Semantic primes such as SOMEONE, SOMETHING, SEE, KNOW, THINK, and SAY are employed in semantic explications, while semantic molecules help explain color experiences more concretely through actual reference objects identified by the speakers: getih (blood), budin (cassava), areng (charcoal), godhong (leaves), kunir (turmeric), and banyu segara (seawater). Thus, color meanings are not explained merely through color equivalents but through semantic scenarios related to the speakers' experiences.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

Natural prototypes also play a role in color conceptualization. Objects repeatedly mentioned by speakers as the most representative examples of particular colors are identified as prototypes on the basis of the interview data. The natural environment and the range of activities within the community, including vegetation (godhong), agricultural products (budin and kunir), natural materials (areng), bodily fluids (getih), and aquatic environments (banyu segara), provide sources of visual experience that contribute to the formation of color categories. The identification of prototypes and semantic molecules is based entirely on the participants' direct responses. From a sociocultural perspective, color lexicons demonstrate the relationship between language, the environment, and cultural experience. Colors are associated with objects, habits, activities, and the community's social practices. Nevertheless, cultural associations are not treated directly as lexical meanings; rather, they serve as contextual factors that support the understanding of color, as evidenced by the participants' accounts.

Theoretically, this study demonstrates that NSM can be used to explain Banyumasan color lexicons through a combination of semantic primes and semantic molecules, thereby producing explications that are simpler, non-circular, and grounded in the speakers' concrete experiences. Empirically, the study documents six basic color lexicons based on data from five native speakers. Methodologically, it demonstrates how speaker-based data can be used to identify perceptual components, prototypes, semantic molecules, and relationships between color, the environment, and culture.

Accordingly, the study yields three main findings: (1) the semantic components of Banyumasan color terms encompass the experiences of seeing, recognizing visual characteristics, knowing, distinguishing categories, and assigning labels; (2) natural prototypes and semantic molecules connect visual experiences with concrete color concepts; and (3) culture provides a context for social experience, while the natural environment offers sources of visual experience and concrete references. Therefore, the basic color lexicons of Banyumasan are understood as a meaning system that brings together language, perception, the natural environment, and the cultural experiences of its speakers.

6. Acknowledgement

The author would like to express sincere gratitude to the lecturer of the Semantics course for the knowledge, guidance, direction, and valuable feedback provided throughout the learning process and the completion of this work. Appreciation is also extended to the Head of the Doctoral Program in Linguistics at Universitas Sumatera Utara for the support and opportunities provided to the author to broaden academic perspectives and develop scholarly competencies in the field of linguistics. Furthermore, the author would like to express appreciation to the Head of the Study Program and the Dean of Universitas Muslim Nusantara Al-Washliyah for their support, facilities, and opportunities, which have contributed to the implementation of academic activities and the development of scholarly knowledge.

The guidance, support, and contributions of all those involved have played a significant role in facilitating the learning process and the completion of this work. The author sincerely hopes that the knowledge, guidance, support, and kindness extended by all parties will be duly rewarded and will continue to contribute to the advancement of knowledge, particularly in the field of linguistics.

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