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Color-Encoding Visualizations as a Tool to Assist a Non-Literate Population in Completing Health Survey Responses

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Abstract

Visual representations of data have increasingly included color-encodings to help engage participants in health research. However, there is limited information on the way in which participants interpret color or on the influence of embedded cultural interpretations of color on survey responses. This study examines the interpretation of color-encodings used to indicate survey response options and their impact on participants' responses. Using a descriptive, cross-sectional design, interviews were conducted with 30 older Hmong adults from one Midwestern city in the United States. A survey data collection method was developed using: (a) an Audio-Computer-Assisted Self-Interviewing tool with (b) text-based and color-encoded response options and (c) assistance from a familiar helper. We analyzed the responses using directed content analysis. Findings reveal that some colors (red, black, and white) have strong cultural connotations; such colors were strongly correlated with specific emotions, while others (green, blue, purple, and pink) had no cultural meaning. Early in the survey, some older Hmong were distracted by response options indicated in red and black, influencing their response choices. However, with repeated instructions from the helpers, all participants overcame the color-related distractions and completed the survey. The findings highlight the importance of using colors cautiously and purposively in visualization development.

Keywords

visualization; color; health survey; limited English proficiency

Introduction

Currently, 32 million adults in the United States (U.S.) are unable to read (1). According to the National Assessment of Adult Literacy, 14% of adults fall into the category of “below basic” in “prose literacy”, indicating that they only have the most elementary literacy skills (2). In addition, 41% (25.1 million) of the U.S. population aged five and above has limited English proficiency (LEP), i.e., an English speaking level of less than “very well” (3). Many surveys, including those used by Behavioral Risk Factor Surveillance Systems, require literacy proficiency; the ability to read and write (4,5). Hence, current data collection tools

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do not address the needs of populations who have LEP. In order to obtain health risk information from groups that are currently excluded due to low literacy (often those most likely to be at risk), current data collection tools must be modified.

Strong evidence suggests that individuals with low health literacy have poorer health outcomes (6). However, people with LEP are at a greater risk of poor health than those with low health literacy (7,8), which is defined as the “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services for appropriate health decisions” (9). Individuals who have low health literacy and LEP are more likely to have lower socio-economic status, be aged 65 years or older, and come from racial and ethnic minority groups (2,7). Thus, ethnic minority populations who are LEP and/or non-literate are at a greater risk of experiencing health disparities (10). Failure to include these populations in research can inadvertently promote the continuation of health inequities, since disparities that remain undocumented remain invisible. Therefore, to decrease health disparities, it is imperative to find ways of including non-literate or LEP individuals in research studies.

One way to increase participation and inclusion of LEP and/or non-literate individuals is by developing health surveys with carefully designed visualizations, including colors. While visualization techniques extend beyond the use of color, color plays an important role in visual representations of data or information (11–13). Although researchers have used color to visually represent health information for patients, providers, and policy makers (14), they have not yet used color-encoding as a visualization method for gathering health data from non-literate, low literacy, or non-English speaking individuals.

Therefore, the purpose of this study is to examine the interpretation of color-encodings used to indicate survey response options and the impact of color-encodings on participants’ responses. We designed a technology-based data collection tool that incorporated visual representations with color-encoding—a color scale—to assist LEP and/or non-literate individuals in responding to survey questions. In particular, we focused on one Asian ethnic population—the Hmong—because they embody characteristics of non-literate and LEP individuals who could benefit from color-encoding in surveys.

The Hmong Population in the U.S.

The Hmong people are a Southeast Asian ethnic group who immigrated to the U.S. as refugees after their involvement in the Vietnam War. There are 260,073 Hmong people living in the U.S. (17), with the largest populations in California, Minnesota, and Wisconsin (16). They have an oral tradition (18), and 90% of Hmong aged 50 and above in the U.S. have LEP (19). Consequently, Hmong people are unable to participate in national surveys, which contributes to the health disparities that they experience and leaves such disparities unaddressed (20). In order to reduce the disparities that result from populations like the Hmong being omitted from national surveys, one approach is to use color-encoding in lieu of language for surveys in this population. However, to date, this has not been examined.

Color-Encoding and Culture Research

A visualization is defined as a graphical representation designed to enable exploration, analysis, and communication (21). A component of visual representations that can be used in survey research is color. Color has been studied across multiple disciplines including psychology, physics, art, graphic design, physiology, and human computer interaction; each field has its own terminology (22). For instance, research on color includes a range of biological components related to color perception (e.g., the anatomy of the eye and the capabilities of human cognition) which can guide developers in selecting color-encodings that leverage biological visual processing strengths and address limitations, such as color blindness and age-related changes (23). Furthermore, researchers have studied how color is related to cognition (24), human perceptions (25), and psychological and emotional reactions (26); however, limited studies have focused on cultural interpretations of colors. Culture is defined as “software of the mind,” i.e., “the collective programming of the mind which distinguishes the members of one group or category of people from another” (27). Hence, cultures differ from one another because cultural elements may be taught, transmitted, shaped, and shared among people differently (28).

Existing literature from cultural studies of color acknowledges the variations in color meanings across cultures. For instance, black signifies death in the West while in Egypt it signifies rebirth. White is worn by brides in the Western countries while white worn in China signifies mourning. In addition, researchers have shown that colors elicit strong emotions (29,30). Use of color in visual representations has been found to increase pattern recognition, recall, and memory in literate respondents (24,31). Color also affects attention and decision-making (32). Silic (2016) conducted a study to explore how colors (black, blue, yellow, red, green, and white) influenced users’ attention in two different cultural settings: the U.S. and India. They found that red seemed to be the most efficient color in preventing users from continuing their action in the U.S. subgroup, and yellow seemed to be the color with the highest effect on users’ decision-making in the Indian subgroup (32).

Despite the increasing focus on colors, researchers have only focused on color in the context of website design (33), gaming (34), warning messages (32), and preferences (35), but not on its impact on survey responses. Thus, it remains unknown whether or how color-encoding influences responses to survey questions from LEP and/or non-literate individuals. Therefore, the purpose of this study is to examine the interpretation of color-encodings used to indicate survey response options and the impact of such color-encodings on older Hmong participants’ responses.

Methods

This study used a descriptive cross-sectional design and was part of a larger study that examined the feasibility of a data collection tool, the Audio-Computer-Assisted Self-Interviewing method with Color-labeling and Helper Assistance (ACASI-H; 36). This study was approved by the University of Wisconsin Institutional Review Board.

Sample & Setting

Thirty Hmong older adults from a Midwestern city participated in this study. Inclusion criteria were: (1) self-identified as Hmong, (2) aged 50 years or older, (3) reported as unable to speak English, and (4) had a usual family helper. Usual family helpers were included in this study because Hmong older adults often rely on these individuals to read their English documents, and because many do not use computers. Including their usual helper to complete the survey would be consistent with cultural practices among Hmong older adults. Inclusion criteria for helpers were as follows: (1) aged 18 years or older, (2) self-identified as able to read and understand English, (3) nominated by older Hmong participants as someone who routinely helps an older participant with English documents, and (4) was comfortable using a computer. A willingness to participate both in the ACASI-H interview and in a face-to-face debriefing interview was necessary for inclusion.

Data Collection & Procedures

We recruited participants from two community centers with high proportions of Hmong. Individuals at the centers were approached by a researcher, who is bilingual in Hmong and English, and who provided an oral description of the study purpose and process. Interested participants were directed to give their telephone numbers to the researcher at the end of the oral description. The researcher also provided contact information to individuals interested in participating and asked participants to refer other potential participants to the study (snowball sampling).

The researcher made telephone calls to interested individuals, screening them for eligibility. Individuals who met the eligibility criteria were invited to participate in a survey and a follow up interview. Interviews took place at a location that was convenient for participants, either at their home or the community center. Before the interview, the researcher obtained oral consent from participants and helpers, explaining procedures to complete the secure computer-assisted survey (Qualtrics, [qualtrics.com](https://www.qualtrics.com)) deployed on a laptop. Oral consent was obtained since the Hmong have an oral tradition, with no written language until 1951 (18). We provided the participants with a laptop, mouse, and speakerphones to complete the survey. Participants were directed to take the survey in the way that they would normally complete a survey sent to them. The survey completion process was video-recorded with a small digital camera placed in front of helpers and participants, but behind the laptop screen to record interactions while completing the survey. This allowed researchers to observe reactions and discussions taking place during the survey process. Following survey completion, an interview was conducted with the older adult and helper focusing on their experience of the survey process, including their experience with the color-encoding response categories. Interviews were audio recorded. Each participant pair (i.e., helper and older adult) was compensated \$20 for their time.

Technology-based Data Collection Method

We designed a data collection method that included an audio-computer assisted, self-interviewing mode, with response option color-labeling and helper assistance (ACASI-H). The ACASI-H survey was presented on the laptop screen in three forms, including (1) on the top of the page: a button to play a pre-recorded *audio* of Hmong translations of each

question and each response option; (2) in the middle of the page: presentation of *English text* for each question and each response option; and (3) in the middle of the page on the screen and underneath the English text for each response category: *a colored band with one color corresponding to each response option*. Each text response category was encoded with a unique color, which was identified in the audio translation (see Figure 1). This allowed the older non-literate Hmong participants to select a response by identifying the color that corresponded to their selected response. The helpers could confirm that intentions of the older Hmong were consistent with their responses. The combination of three forms of visual display accompanied by audio instructions in Hmong allowed the older Hmong participants to hear questions in their native language and choose a response by selecting the corresponding color. The English text on the screen was included to accommodate the family helpers with a range of Hmong fluency levels. This approach accommodated differences in language fluency for both the older adults and the helpers.

Color-Encoding Response Categories

Prior pilot testing was conducted to determine appropriate color/response category associations (36). Based on pilot testing, the survey used brighter colors for positive connotations and darker colors, except red, for negative connotations. For example, a question in the 12 item Acute Short Health Form asked

: “Does your health now limit you in climbing several flights of stairs? If so, how much?” with response options, “Yes, limited a lot,” “No, limited a little”, or “No, not limited at all” (see Figure 2). We encoded these response categories to align with cultural meanings of colors. For example, black (negative connotation) was used for the response “Yes, limited a lot, cannot climb several flights of stairs” since black had the most negative connotation. Hence, black was determined to be the most appropriate choice. We chose yellow to indicate that a person is physically able to climb the stairs, since yellow had the most positive connotation.

Measures

The main goal of our study was to test the ACASI-H method, and not to gather health information. However, we used the 12 items-Acute Short Form Health Survey (SF-12; 37) and added one sensitive question about urinary urgency, eight demographic questions, and five questions on the use of technology for a total of 26 survey items.

The post-survey qualitative interview included a series of questions regarding the feasibility of using the computer-assisted survey. In the parent study, questions focused on: overall experience, survey experience, practicality of including helpers and the usability of technology, the pre-recorded oral translation, and response categories labeled with colors. Additional questions were asked about participants’ interpretation of the color-encoding and how colors aid or otherwise influenced their responses. This paper only focuses on findings related to the color-encoding of response categories, including interpretation of color-encodings and their influence on responses. For example, we asked participants, “I am interested in hearing your thoughts about the colors. Did the color influence what you

picked? Or did you respond to the color instead of the question itself? Tell me more about it. What did it feel like to select each color (e.g., yellow, blue, green, pink, black, and red)?”

Analysis

Audio recordings were transcribed and translated from Hmong into English by a team of bilingual researchers fluent in Hmong and English. An undergraduate Hmong student transcribed and translated the Hmong interviews to English. The quality of the translation and transcription was then reviewed by the first author and another bilingual Hmong student. The video and audio recordings were imported into NVivo and reviewed to determine the number of people who displayed difficulty in understanding the color/response category associations.

Although we did not ask specific questions in regard to culture, we listened for responses in regard to: (1) colors being associated with emotions (e.g., whether color evoked emotions), (2) negative or positive connotations of meanings of colors, (3) cultural associations of colors, and (4) color’s influence on response selection (e.g., whether color influenced response options in a positive or negative way). Because of such predetermined topics, directed content analysis was used to analyze the transcripts (38). For example, when a participant stated, “Blue, I don’t think of anything. There is nothing with blue. The color green and color yellow, there is nothing [associated with it],” (Participant 2), we coded this as ‘colors without cultural meaning.’ When a participant stated, “red means you are sick or ill”, we coded this as ‘colors with cultural meaning.’ Furthermore, when a participant stated, “black is not a good color,” we coded this as a ‘negative connotation of color.’ When a participant stated, “yellow, blue, and green are good. There are no meanings,” we coded this as ‘positive color connotation and no cultural meaning.’

During our analysis, the majority of helpers stated that colors do not have any cultural meaning for them because they grew up in the U.S. As one helper shared, “The color is fine with me, because I grew up here and I am fine with it” (Helper 24). Hence, this paper only focuses on the responses of the Hmong older adults during the survey.

Results

Demographics

Of the 30 participants, 22 (73%) were female and 18 were married (60%). The average age of the participants was 66. The average period that participants had lived in the U.S. was 23 years. Over 83% of the Hmong participants reported that they did not read and write English well or at all. In addition, over 70% of Hmong participants reported that they did not read and write in Hmong well or at all (Table 1).

Use of Color for Recording Response Options

All older Hmong participants (n=30) reported that colors did not influence their responses and that they responded to the content rather than the color. However, by reviewing the videos, we saw that a subset (n=5) of older Hmong participants appeared to have been distracted by the colors red and black at the start of the survey, which caused confusion and

resulted in them responding according to their interpretation of the color rather than the content of the response. Despite this, from the video analysis, helpers were heard to re-explain and re-orient these participants to respond to the content. Participants required an average of four minutes, and repeated instructions from helpers, before they responded correctly by associating color with the actual meaning of the response categories and not with the meaning they attributed to the color.

Older Hmong participants shared a consistent interpretation of the meanings of the colors, suggesting a cultural rather than idiosyncratic meaning. Thus, we coded responses related to cultural meaning as “Colors with Cultural Meaning” and colors that did not have cultural meaning as “Colors without Cultural Meaning” (see Table 2).

Colors Without Cultural Meaning

All participants indicated that several colors had no meaning for them and did not elicit an emotional response: green, blue, purple, and pink. They were able to respond appropriately when their response corresponded to one of these colors. In fact, most of the participants suggested that these colors should be used in future surveys. One participant shared, “The colors are good. It’s just that for us elders, we think that the color red is not so good” (Participant 9).

Colors with Cultural Meaning

Although five older Hmong participants were initially unable to separate their responses from the color’s meaning, most Hmong agreed on the meaning of the colors during the post-interview. When asked how the colors made them feel, participants discussed a consistent meaning of red, black, and white. All their descriptions referenced cultural experiences and were similar across the majority of the participants.

Red.—Most participants (n=26) described the color red in negative terms with a high level of intensity related to cultural meaning. Some participants shared that, to them, red represented “murder”, “blood”, “a bad omen/misfortune”, “sickness or illness”, “danger”, and/or “divorce.” Participant 1 stated the following about the color red:

Red is not good, because when we lived in Thailand, using a red pen to write indicated an intention to kill. So then, I thought [when I saw the red] “they won’t let you write with red.” If you do that, it indicates an intention to kill people. So people won’t let you write in red.

The most commonly stated meaning of red was “*sub*,” which in Hmong means “bad omen/misfortune.” Therefore, many of the older Hmong participants reported that they completely avoided using red in their everyday lives, including wearing red clothing and writing in red. Participant 5 explained “...some Hmong say it’s because “*sub*” is strong and you cannot wear red-colored clothing.”

Furthermore, almost all participants discouraged the use of the color red in any written documents. Participant 11 said, “... the color red is not appropriate.” Another participant stated, “No one writes to each other in red” (Participant 10). In particular, from the video

analysis of one of the five participants who struggled with separating the content of the responses from the color's meaning, we saw that as the participant and her helper listened to the audio recording as it read the color responses, the older Hmong participant gazed and paused for more than two seconds, stating, "oh, red is not good. I can't select red."

Black.—Some participants (n=12) reported a negative meaning for black. However, compared to red, fewer saw black as having a bad meaning. Hence, the intensity of the cultural meaning of black was lower than that of red. One participant stated "...black is the worst thing" (Participant 13). Others (n=12) associated the color black with "death." For instance, Participant 3 shared that "Black is the color of death."

Other participants (n=7) described black as related to an individual's personality, such as being secretive. For example, Participant 10 explained that; "...us elders say that the color black represents a cruel person [in Hmong, *lub siab dub*]." However, most participants shared that using the color black in writing is acceptable. In fact, some of the participants stated a preference for black, rather than red, for encoding negative connotation response options. One participant stated, "I think that for the negative bad response, the color black is better" (Participant 13).

White.—All participants (n=30) associated white with a positive connotation. For example, many (n=18) referred to the color white as indicating a person who has a pure heart, is very open and not secretive, or is very generous. For example, Participant 7 shared that "white means pure and clean... wherever you go, no problem can stop you." Another participant shared, "truthfully, the color white means that you have a very pure, open white heart in dealing with people. For example, to your family or friends, you are generous and giving when you have something to share. You speak to everyone, and they know who you are" (Participant 3).

Discussion

To our knowledge, this is the first study to examine the interpretation of color-encodings used to indicate survey response options and their impact on participants' responses. We found that among all participants, some colors held clear, consistent, strong meanings that appeared to be linked to the Hmong culture, specifically red, black, and white. Hence, five participants were initially unable to separate their responses from the color's meaning at the beginning of the survey. They focused on the cultural meaning of the color rather than the content of the response options that the colors encoded, which influenced their responses. This finding is consistent with the existing literature's suggestion that colors can affect pattern recognition, recall, and memory (24,31) as well as attention and decision-making (32).

All participants reported similar interpretations of colors that were rooted in their Hmong culture (red, black, and white). However, red seemed to have a higher level of intensity related to cultural meaning compared to black and white. Elliot and colleagues (26) reported that the effect of color interpretation on psychological functioning is developed through social learning (e.g., repeatedly coupling color with particular messages, concepts, or

experiences). Thus, our findings reveal that color elicited specific information for older Hmong participants, and the interpretations of red, black, and white may stem from exposure to messages in their community (social learning) from a young age. For instance, when some older Hmong participants saw red and black, they instinctively avoided the associated content. This behavior is consistent with other findings in which red triggered avoidance and impaired performance in educational achievement (26,39,39–41). Hence, based on Elliot's work, the use of color visualizations to "present" information (as opposed to information gathering) may well have implications beyond the Hmong. In addition, these findings have implications for researchers who use color-encodings in survey development for Hmong or other low literacy groups, and suggest the need for caution in using colors.

Despite the cultural interpretations of colors, based on the video recording analysis, Hmong participants were eventually able to complete the task of responding to the survey questions using color-encodings, but only after repeated instructions from the helpers. This finding suggests that colors influence responses for Hmong participants; however, involving the helpers as a part of the survey process helped to address this issue and allowed color-encodings to be used effectively. Such findings are new, as existing cultural studies have not considered cultural components in relation to including a helper to facilitate answering survey questions more effectively. Hence, it is important for researchers to consider other cultural factors beyond colors (e.g., the cultural norm of including a helper) that can facilitate the task more effectively (e.g., the use of color-encodings with response categories). These findings have implications for survey developers interested in using colors to encode response options as a way to increase the accessibility of their surveys, particularly for people from cultures that are similar to the Hmong.

Interestingly, the helpers shared that colors do not have any cultural meaning to them because they grew up in the U.S. This finding postulates that color-encodings of response categories may be more effective with people who grew up in the U.S. However, more research is needed to examine this theory. Future research could compare color interpretation and its impact on the responses of foreign-born and native-born populations.

Implications for Visualizations

Our findings provide significant implications for visualization development involving color-encoding. In particular, our study highlights the importance of careful selections of colors when designing visualizations, such as surveys with color-encodings or presentations of information using color. Individuals using colors to encode visualizations or surveys should be informed and purposive in their selection of colors. They must consider the importance of the reader's interpretation of the color and not be influenced only by that which would catch the reader's attention (42). For example, the color red is often used in Western cultures to indicate danger or alerts (e.g., stop signs). In this study, older adult Hmong participants indicated that red has a negative connotation and is related to killing or bad omens. Thus, colors should be linked to appropriate messages; for example, for surveys developed for Hmong people, the color red should be used to represent data or information that indicates killing or bad omens, which is congruent with Hmong culture. Depending on the questions

and associated response items, colors that do not have a strong cultural meaning might be considered and used to avoid bias in the responses due to the colors.

Because some colors have clear cultural meanings that may differ across cultural groups, researchers developing surveys for use with specific cultural groups must assess the interpretation of the colors by the target populations. To do this, researchers must understand the cultural background of their target population. This can be achieved through partnering with individuals from the target population in order to assess the content and face validity of the survey, including color-encodings used in the survey. In addition, the color meaning may vary with levels of enculturation. Thus, more research is needed to examine enculturation and color meaning among different populations.

Limitations

This study should be interpreted in the context of some limitations. First, the study featured a small sample size of Hmong participants. Hence, the results may not be generalizable to other LEP and non-literate individuals, individuals with proficient literacy and health literacy, fluent English speakers, or individuals from other racial and ethnic minorities. However, the findings still warrant applicability to LEP and non-literate Hmong in general. Future research could include investigations of how English-language proficiency and culture individually or collectively impact the use of color-encodings in survey development with a larger sample size in the U.S. In addition, this study did not collect information on participants who may be color blind, as color-encoding response categories were not designed to address this issue. Hence, future research could collect such information and develop alternative color-encoding response categories for color blind individuals.

Conclusion

Limited literature has focused on the impact of cultural differences on item response in survey research. With the rapid growth of LEP and/or non-literate populations in the U.S., the success of gathering survey data among LEP and/or non-literate individuals may depend on creating culturally sensitive color-encoding of responses for participants. This study examined the interpretation of color-encodings used to indicate survey response options and the impact of such color-encodings on participants' responses. Results revealed that the colors red, black, and white had meanings based on participants' Hmong culture, which affected their survey responses. Considering such results, this study offers an opportunity to collect health information from groups that have been previously excluded in survey research. With the increasing use and acceptability of websites, this study also provides opportunities to tailor color-encodings to the Hmong and other cultural groups to enable them to participate in survey research. Hence, if we can collect health information using culturally and linguistically appropriate strategies, we can identify health disparities, thereby ultimately reducing health disparities among LEP and non-literate groups.

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Figure 1.

Audio-computer assisted self-interviewing mode with color-labeled, and helper assistance (ACASI-H) Screen. Description: (1) on the top of the page: a button to play a pre-recorded *audio* of Hmong translations of each question and each response option; (2) in the middle of the page: presentation of *English* text for each question and each response option; and (3) in the middle of the page on the screen and underneath the English text for each response category: *a colored band with one color corresponding to each response option.*

Does **your health now limit you** in climbing several flights of stairs? If so, how much?

Figure 2.
Color-Encoding Response Categories Example

Table 1.**Hmong Older Adults' Literacy**

	N	Percent
How well do you read Hmong?		
Not at all	21	70
Not well	2	7
Well	4	13
Very well	3	10
How well do you write Hmong?		
Not at all	23	77
Not well	3	10
Well	3	10
Very well	1	3
How well do you read English?		
Not at all	26	87
Not well	3	10
Well	1	3
Very well	0	0
How well do you write English?		
Not at all	25	83
Not well	4	13
Well	1	3
Very well	0	0

Table 2.

Summary of Categories and Quotes

Color	Cultural Meaning	Quote(s)
Red	<ul style="list-style-type: none">• Murder• Blood• Bad omen/misfortune sickness/illness• Danger• Divorce	<p>Red is not good, because when we lived in Thailand, using a red pen to write indicated an intention to kill. So then, I thought [when I saw the red] “they won’t let you write with red.” (P1)</p> <p>The color red, let me tell you, for us elders, it has always been a taboo/prohibition that we don’t use it, to be honest with you. Red t-shirt, we don’t allow [people] to wear... They said that if you use red then we will have bad omen... There will be a lot of illness that will occur in you. (P6)</p> <p>The color red, based on what our Hmong mothers and fathers have said, it means blood, “<i>sab</i>” [in Hmong], which is something bad, a sickness/illness... Like if we translate it right now, for red cars, if you drive one, that one is usually involved in more accidents than the blue or green car. (P7)</p> <p>The color red is like blood. (P10)</p>
Black	<ul style="list-style-type: none">• Death• Being secretive• Dark• Corrupt heart	<p>Black is the color of death... So for black, they said that you have a black heart... When you have good words, you don’t tell it to people. So you have a black heart [<i>kaj ua lub siab dub nxtig</i>]. (P3)</p> <p>The color black, to be honest, as humans, us elders say that the color black means a corrupt heart [“<i>lub siab dub</i>”]... the color black is like a person, who has a dark heart, a thief, steals from others. (P11)</p>
White	<ul style="list-style-type: none">• Pure heart• Very open• Not secretive• Very generous• Clean	<p>The color white means that you have a very pure, open heart in dealing with people. (P3)</p> <p>White means clean. (P6)</p> <p>... white means pure and clean. There is nothing [bad], [it is] clear, wherever you go, there is no problem to stop you. (P7)</p>