

Visual Design of Emotion Cards: Content Validation of Emotion Colors and Facial Expressions

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Abstract

The visual elements—such as text, color, and imagery—on emotion cards used by helping professionals significantly influence client projection and expression during sessions, thereby impacting the efficacy and outcomes of the counseling process. This study developed two distinct prototypes designed for counseling purposes: “Color Cards,” which convey emotion solely through color, and “Facial Expression Cards,” which feature facial graphics. Both sets contain an identical number of cards and share the same emotion vocabulary. To evaluate whether the visual designs align with users' cognitive perception of emotions, a content validation was conducted focusing on emotion vocabulary, color application, and facial expression design. A total of 91 and 92 participants, respectively, evaluated the two sets. The validation process involved participants interacting with physical cards and providing feedback on their perceptions and design suggestions through one-on-one questionnaires and interviews. The results indicate the following: (1) The initial set included 62 emotion terms; based on participant feedback, 7 new terms were added and 3 were removed, resulting in a final total of 66 terms. (2) The color application and facial expression designs generally aligned with user cognition. Ultimately, only 11 cards required specific design adjustments: 5 from the Color Cards and 6 from the Facial Expression Cards. Furthermore, the “Facial Expression Cards” demonstrated a higher overall acceptance rate by users. This study establishes two sets of emotion cards suitable for the counseling field. Helping professionals may reference these findings and utilize the developed cards to assess the emotional states of their clients.

Keywords: emotion cards, color, facial expression, content validation

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Introduction

Being able to recognize facial emotions in others is a necessary ability for understanding and establishing complex social concepts (Baron-Cohen, 2002; Thomas & Jordan, 2004). Visual image tools like cards help individuals recognize and express emotions (Kuo & Chang, 2010). For example, UNO color cards can be used to connect with personal emotions for therapeutic purposes (Drew et al., 2007). It was mentioned in Conallen and Reed (2016) that expression cards are widely used in emotional education, with benefits verified by relevant research; cards featuring basic emotion categories help clients develop the ability to recognize others' emotions in different situations (Conallen & Reed, 2012).

Schimmel and Jacobs (2011) believe that creative counseling techniques (such as cards) can help clients integrate visual, auditory, and tactile elements to complete the therapeutic process. The visual content on cards (such as images, text, colors) affects clients' projection or expression (Chiang & Chen, 2008; Drew et al., 2007), potentially influencing the smoothness and outcomes of the counseling process. Looking at color factors alone, research shows that color influences people's affective judgments (Briki & Hue, 2016) and impacts emotions (Akers et al., 2012). If the card design lacks visual design guidelines or if the use of images, text, or colors doesn't match the general public's cognition or impressions of emotions, the use of cards might cause clients to experience omissions, confusion, or bewilderment during the counseling process. How to systematically research and design cards presents an opportunity for designers to contribute.

The researcher has worked with teachers specializing in counseling and guidance through other projects; it was indirectly discovered that most psychological counselors own multiple card decks, and indirectly found that: (1) clients sometimes cannot resonate with the visual content on the cards, making it difficult for them to select cards that match their personal situations during counseling; (2) the content of all card decks isn't completely consistent, and sometimes requiring different decks to compensate for missing elements; (3) designers project their personal experiences into card design, sometimes prioritizing aesthetics over emotional theory, which doesn't always align with the general public's understanding.

The researcher conducted a preliminary investigation of “emotion cards” and found that these cards are mostly created by professionals with psychological expertise and practical experience. However, it was also discovered that emotion cards used for high school students and above indeed have inconsistencies in emotional terminologies and card quantities. Card content and design may affect the counseling process and outcomes. Where design expertise can provide assistance, it should improve the effectiveness of card usage.

In summary, this research focuses on emotion cards, designing and producing actual cards to verify whether design criteria are complete, and evaluating the appropriateness of card visual design through content validation. The researcher's 2022 research was focused on establishing visual design criteria for emotion cards. This study, which builds on the 2022 research, invites users to validate the visual design criteria of emotion cards, with research objectives listed as follows:

1. Conducting content validation and analysis with the general public regarding visual design criteria, including validation of emotion color and facial expression design.
2. Proposing modification suggestions for visual design criteria of emotion cards.

Literature Review

Emotion

Goleman (2009) defined emotions as: “feelings, specific thoughts, physiological and psychological states, and related behavioral tendencies” (Chang, 2016). Emotions affect human cognition, feelings, learning, communication, and decision-making judgment (Dubey et al., 2014). Knowing how to recognize one's emotional state can help individuals sense experiences, understand their inner needs, and take action (Greenberg, 2004). Schreier (2002) believes that emotional control and utilization stem from an individual's ability to first self-recognize emotional states, including awareness of emotional elements and categories, as well as emotional processes.

There are mainly two theories of emotion classification. One is categorical perception, meaning dividing emotions into different types (Biehl et al., 1997; Calder et al., 1996; Ekman, 1999; Goleman, 2009; Linnenbrink & Pintrich, 2002). The researcher has compiled relevant literature in Table 1.

Table 1

Compilation of Literature on Emotional Categorical Perception

Literature Content	Data Source
Emotional quotient (EQ) classified emotions into eight categories: Love, happiness, surprise, sadness, anger, fear, disgust, and shame.	Goleman (2009)
Dividing emotions into the following: positive emotions and negative emotions.	Linnenbrink and Pintrich (2002)
This is currently the most widely cited classification standard. It is believed that humans have evolved at least six basic emotions for adaptation and survival: happiness, anger, sadness, fear, disgust, and surprise.	Ekman (1999)
When using the Facial Action Coding System (FACS) for facial expression image coding, there are seven emotions included: anger, contempt, fear, happiness, sadness, disgust, and surprise. Each emotion has eight images, totaling 56 images.	Biehl et al. (1997)
Dividing emotions into four types: happiness, sadness, fear, and anger.	Calder et al. (1996)

Source: Compiled by this research (2024)

Another method of emotion classification adopts dimensional perception where emotions are considered as continuous processes and degree changes, and emotions are presented using two-dimensional or three-dimensional spatial methods (Russell, 1980; Tarasenko, 2010; Thayer, 1989; Wu et al., 2013; Table 2). Some scholars believe that emotion classification involves both categorical perception and dimensional perception, rather than just a single classification method (Matsuda et al., 2013). Commercially available emotion cards mostly use Ekman's (1999) six major emotion classifications as a foundation for initial classification, with each classification then providing different emotion vocabulary according to positive/negative emotions (pleasure dimension) or intensities (arousal dimension).

Table 2*Compilation of Literature on Emotional Dimensional Perception*

Literature Content	Data Source
The PAD model divides emotions into three dimensions: (1) P (Pleasure): referring to Pleasure and Displeasure, distinguishing whether the emotional state is positive or negative. (2) A (Arousal): referring to Arousal and Non-arousal, a combination of emotional sensitivity and physical vitality. (3) D (Dominance): referring to Dominance and Submissiveness, representing the degree to which emotions are controlled.	Mehrabian (1996), Tarasenko (2010)
Thayer (1989) proposed the Valence-Arousal emotion plane (V-A emotion plane) model. The horizontal axis is Valence, indicating the pleasure level of emotions, with positive and negative feelings at opposite ends. The vertical axis is Arousal, indicating the fluctuation level of emotions. Higher values indicate greater emotional fluctuation after receiving stimulation (active), and lower values indicate calmness (passive).	Thayer (1989)
Circumplex model of affect: Divides emotions into two dimensions: valence and arousal. Valence refers to the feeling of the subject after receiving stimulation; arousal refers to the degree of emotional activation after the subject receives stimulation.	Russell (1980)

Source: Compiled by this research (2024)

Card Effectiveness

In psychology, the use of card images for psychological projection has been documented for decades (Cohen et al., 2015). However, there is limited quantitative research on using cards in counseling work. When cards serve as counseling tools, objective statistical data should prove their applicability (Cohen et al., 2015).

Based on years of experience using cards in counseling work and relevant literature (Chung, 2013; Liang, 2013; Yang, 2011), Liang and Hsu (2016) summarized that the effects of using cards in counseling mainly include these three points: (1) Cards can reduce clients' resistance to counseling and helping build relationships with clients. (2) The patterns or text on cards may represent a part of the client's subconscious, helping clients recognize their emotional distress. (3) The process of clients describing personal feelings, thoughts, experiences, and stories through cards can achieve self-healing effects.

Cards have visual elements, immediacy, and accessibility, so clients don't view them as threatening (Cohen et al., 2015). Cohen et al. (2015) explored how therapeutic association cards affect emotional states. The study used a set of 88 therapeutic association cards as research samples and employed the SAM self-assessment system (The Self-Assessment Manikin) to investigate whether card patterns might induce different emotional states in clients. Research results showed that cards significantly influence subjects' emotional states. This study reflects that card patterns affect clients' emotions. If the visual design of the card doesn't meet expected goals and expectations, it might affect counseling effectiveness.

Based on function and usage, emotion cards can be divided into “clarification-type” and “projection type” (Huang et al., 2016; Kuo & Shen, 2014). Clarification-type cards primarily

present text. Through the text on cards, clients can examine and judge the degree of match between the card text and their own state (Kuo & Shen, 2014). Pai's (2014) research mentioned that over 85% of junior high school counselors use “clarification-type” cards in individual interviews. Most emotion cards are clarification-type cards which have corresponding emotion images and text presented on the cards for each emotion.

Emotions, Expressions, and Colors

Non-verbal expressions of emotions include facial expressions, tone, body posture, and movements, with facial expressions being the most frequently discussed element of emotions (Calder et al., 2003; Lang et al., 2005). This may explain why emotion cards often use facial expression images as content. Beyond the common six basic expressions (happy, surprised, sad, angry, fearful, disgusted), people can combine these expressions to create compound expressions such as surprised-happy or sad-angry. Research has shown that human faces can make at least 21 different facial expressions (Du et al., 2014).

Shimokawa et al. (2001) defined emotion recognition as “the ability to identify others' emotions from their facial expressions or situations.” Machajdik and Hanbury (2010) classified emotions using images based on psychological and artistic theories. Their classification reference elements included: color, texture, composition and content. The images were sourced from the IAPS system (International Affective Pictures System) (Bradley & Lang, 2017); they adjusted image colors and applied different textures to images. Results showed their method improved emotion image classification, making image classification closer to the general public's perception of emotions from images. This paper showed that: (1) Image design affects user perception of images; (2) cards, when appropriately designed, can better match the general public's cognition.

Color is also an important factor affecting emotions. Ou et al.'s (2004) research explored whether color and color appearance (saturation, brightness, etc.), emotions (e.g., happy, joyful), and color attributes (cool-warm, light-heavy) had the closest relationship with color. Research results showed that emotions had the closest relationship with color. Gao and Xin's (2006) research discussed the influence of hue, chroma, and brightness on human emotions. The results of the experiment found that hue influences human definitions of emotions, meaning humans, upon seeing certain colors, might associate certain emotions with them. Phongsuphap and Kamolrat (2015) proposed a method to determine emotions of images, using 20 colors representing emotions as a basis for judgment. Research showed that emotional colors is effective in the judgement of images.

Japanese scholars Oyama et al. (1963) conducted color and emotion experiments with Japanese and American students, and their results showed that people generally tend to positively (toward good) of yellow, green, and blue colors more frequently; whereas colors closer to purple and red areas were negatively evaluated (toward bad) more frequently; black and gray were considered “bad” emotions; white was evaluated as a “good” emotion. Additionally, research indicated red is often associated with negative things (Kuhbandner & Pekrun, 2013; Schietecat et al., 2018), particularly with anger, danger, and failure-related emotion words (Fetterman et al., 2012; Pravossoudovitch et al., 2014). The above research showed how people have certain impressions about emotions associated with a particular color.

Research Method

Emotion Card Criteria Data Established in 2022

This research is based on emotion card criteria established in 2022 as the foundation for card design and content validation. Here, we first provide previous research data, including the “essential emotion vocabulary” list (Table 3), emotion color design reference color swatches (example in Table 4), and emotion facial expression design image element references (example in Table 5). In 2022 research, it was consolidated that emotions can be divided into positive and negative emotions. Positive emotion cards include three categories with 22 terms; negative emotion cards include seven categories with 40 terms.

Table 3

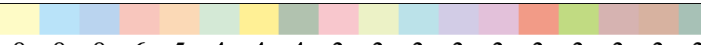
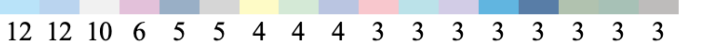
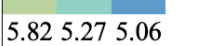
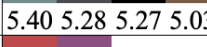
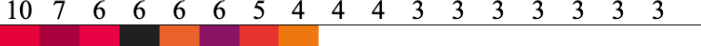
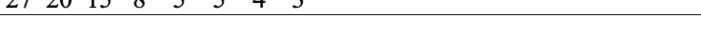
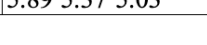
“Essential Emotion Vocabulary” List

Type	Group	Vocabulary
Positive Emotions (N = 22)	Comfort	Relaxed, Comfort, Moved, Calm, Reassured, Blessed
	Happiness	Anticipation, Satisfied, Joyful, Cheerful, Happiness, Grateful, Excited, Like
	Other	Trust, Confident, Hopeful, Shy, Envious, Proud, Stimulated, Love
	Shame	Embarrassed, Humiliated, Guilty, Remorseful
Negative Emotions (N = 40)	Surprise	Surprise, Shocked
	Sadness	Disappointed, Discouraged, Exhausted, Sad, Hurt, Wronged, Lonely, Solitary, Sadness, Suffering
	Disgust	Helpless, Bored, Contemptuous, Unlucky, Hateful, Disgusted, Disgust
	Fear	Uneasy, Doubtful, Tense, Worried, Anxious, Fear, Terrified
	Anger	Troubled, Irritated, Frustrated, Jealous, Anger, Furious
	Other	Self-deprecating, Empty, Confused, Ambivalent

The 2022 research compiled emotion color reference swatch examples through questionnaire surveys as shown in Table 4. The left side of Table 4, “Emotion Color Impression Questionnaire,” shows color swatches selected by respondents from 153 swatches as best expressing that emotion. The number below the swatch is the vote count from 62 respondents. The right side of Table 4, “Emotion Color Compatibility Questionnaire,” invited respondents to evaluate the compatibility between paper color swatches (from 11 commercial emotion cards) and emotion terms. The number below the swatch is the score (rating scale 1–7).

Table 4

Example of Emotion Color Reference Swatches

Group	Vocabulary	Emotion Color Impression Questionnaire	Emotion Color Compatibility Questionnaire
Comfort	Relaxed	 8 8 8 6 5 4 4 4 3 3 3 3 3 3 3 3 3 3 3	 5.58 5.34 5.05 5.02
	Comfort	 8 7 6 6 6 6 5 5 5 4 4 4 3 3 3 3 3 3 3	 5.76 5.58 5.55 5.06
	Calm	 12 12 10 6 5 5 4 4 4 3 3 3 3 3 3 3 3 3 3	 5.82 5.27 5.06
Anger	Troubled	 5 4 4 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3	 5.40 5.28 5.27 5.03
	Jealous	 10 7 6 6 6 6 5 4 4 4 3 3 3 3 3 3 3 3 3	 5.58 5.24
	Anger	 27 20 15 8 5 5 4 3	 5.89 5.37 5.03

Based on the “Essential Emotion Vocabulary” (Table 3), respondents were asked to select corresponding facial expression elements based on their impressions of each emotion term. The research team first analyzed facial expression images from 11 commercial card decks to create a “Facial Expression Element List” (including head angle, face, eyebrows, eyes, mouth, auxiliary patterns, etc.), with different element images of each part being numbered. Visual elements with percentages reaching 5% (items selected by 3 or more out of 55 respondents) were used as reference items for emotion facial expression design. Due to the extensive data, only one example is listed in Table 5.

Table 5

Emotion Facial Expression Design Image Element Reference Example: Calm

Vocabulary	Elements	Items	Research Data Results		
Calm	Head Angle	Image			
		N	36	6	6
	Hair	Image		Didn't find a suitable element	
		N	9	4	
	Eyebrows	Image			
		N	24	22	5
	Eyes	Image			
		N	23	14	14
	Mouth	Image			
		N	23	22	4
	Face	Image		No need any element	
		N	24	19	6
	Auxiliary Patterns	Image	No need any element		
		N	33	6	5

Emotion Card Visual Design Content Validation

This research found users to conduct “card visual design criteria content validation” where emotion card visual design criteria and card design were modified based on feedback from the interview. The procedures are described below: (1) The emotion card design criteria was planned based on the 2022 “Emotion Card Visual Design Criteria,” (2) card design, (3) interview question design, (4) inviting two users for pre-testing, (5) formal interviews (Distributing informed consent forms, providing paper interview outlines, questionnaires, cards, and recording the interview process), and (6) conducting data analysis and content analysis.

Card Design

Word-image cards are the most commonly used type of cards in the market (Chen, 2017), examples of such are emotion cards that place text and images on the same card face;

alternatively, OH cards where text and images are on different cards. Word-image cards help clients become aware of and clarify personal feelings, and also allow clients to freely interpret the meaning of the cards. This research aims to understand whether using the visual design guidelines established in the 2022 research to design emotion cards can produce clarification-type emotion cards that are appropriate for users. Therefore, emotional vocabulary, colors, and facial expression images are combined to design two common styles sold in the market.

Color-Focused. (word-image cards) (Figure 1 left) Based on established emotional vocabulary and reference colors in the design guidelines (Table 4), each card face presents gradient colors as the visual focus representing the connotation of its emotional vocabulary. According to the design guidelines, the top three colors from “User Impression” (left side of Table 4) and “Colors Used in Commercial Cards” (right side of Table 4) (six colors in total) are selected as the foundation. Three colors are selected based on the principle of color harmony for linear gradient matching purposes. The card faces do not have lines, patterns, figurative patterns, or facial expression images, hence making the gradient color combinations of the 62 cards as non-repetitive.

Facial Expression-Focused. (word-image cards) (Figure 1 right) In addition to color elements, facial expression images are added to the cards. Each card face has both colors and facial expression images (mainly head), and the text size consistent with the previous card style. The colors on the cards are presented in blocks. According to the design guidelines, the top three colors from “User Impression” (left side of Table 4) and “Colors Used in Commercial Cards” (left side of Table 4) (six colors in total) are selected as the foundation. Three colors are selected based on the principle of color harmony and applied to the cards. The facial expression images take reference from the design guidelines (Table 5), selecting the top three visual features for each part to form reasonable facial expression images.

Figure 1

Examples of Two Emotion Card Styles in This Study



Note. Left: color-focused; right: facial expression-focused

Interview Question Design

The research interview aims to validate the content of the “Emotional Card Visual Design Guidelines” and the design of two card styles, then proceeding with the sequential content validation for the Emotional Color and Facial Expression Design, and try to find possible improvement solutions. The audio of the entire interview will be recorded with the interview desk as the main picture. The interview is expected to take approximately 1.5 hours to complete. The following explains the validation procedures and methods according to the evaluation objectives. The interview procedure in this study is as follows:

- Step 1 Provide cards, ask interviewees to casually observe and browse through them.
- Step 2 Score each card using a Likert seven-point scale as the standard grading scale.
- Step 3 The researcher selects cards with scores of 4 (inclusive) or below.
- Step 4 Interviewees use markers on the selected cards to indicate where they disagree with the scores, while verbally explaining their reasons for disagreeing.
- Step 5 Ask interviewees to try to describe possible improvement solutions from them.

Research Participants

This study plans to invite at least 90 users to validate each card style. Students (half male, half female) and full-time workers (half male, half female) between the ages of 20 to 45 are invited. The interview venue is fixed in the researcher's office at the school the researcher is employed at. Interviews are conducted in a one-on-one format.

Analysis Method

Conduct statistical analysis (one-sample T-test) on the questionnaires completed by users. Cards not agreed upon by more than half (over 50%) of the interviewees (scores below 4) are listed as first priority for improvement. All results are listed according to statistical results, and cards not agreed upon by more than 20% of interviewees (scores below 4) are also emotional cards that need design adjustments in this study. Content analysis procedures are conducted based on the verbal responses of interviewees, which serve as references for card design improvement.

Results and Discussion

Results

The interview results for the two card samples are as follows: 91 interviewees for color cards and 92 interviewees for facial expression image cards; the age range of interviewees for both card styles is between 20–45 years old. The information of interviewees for each card style is summarized (Table 6).

Table 6

Summary of Basic Information of Interviewees for Two Card Styles

Sample	Item	Gender		Status			Without Art Background	Never Used Emotion Cards Before
		Male	Female	Student	Full-time	Other		
Color	N	42	49	38	44	9	73	74
	%	46.2	53.8	41.8	48.4	9.8	80.2	81.3
Facial Expression	N	43	49	31	51	10	75	74
	%	46.3	53.7	33.7	55.4	10.9	81.5	80.4

This study first conducted one-sample T-tests on each card of the two samples, and 6 was set as the test value to identify cards significantly higher than 6 points. Results showed that among the 124 cards in the two styles, 9 cards received high agreement from interviewees ($p < .05$), with 1 color card and 8 facial expression image cards. The summary of test results is organized in Table 7.

Table 7*Summary of Questionnaire Survey Results for Two Card Samples*

Analysis Item		Cards with Mean Scores Significantly Higher than 6 ($p < .05$)		Cards with Mean Scores Significantly Lower than 5 ($p < .05$)	
		Color	Facial Expression Image	Color	Facial Expression Image
Comfort	Relaxed	6.26			
Happiness	Satisfied		6.23		
	Happiness		6.18		
	Grateful			4.54	
	Excited		6.33		
Other Positive	Envious			4.70	
	Love		6.21		
Shame	Humiliated				4.33
Disgust	Disgusted		6.30		
Anger	Irritated		6.24		
	Jealous				4.27
	Anger		6.30		
	Furious		6.48		

In addition, one-sample T-tests were conducted on each card of the two samples, setting 5 as the test value to identify cards significantly lower than 5 points. Results showed that among the 124 cards in the two styles, only 4 cards received lower agreement from interviewees ($p < .05$), including 2 color cards (Grateful and Envious) and 2 facial expression image cards (Humiliated and Jealous); indicating that most interviewees agreed with the card design in this study, and these data results will serve as references for “design adjustments needed” cards in the future.

In addition to selecting cards with higher and lower agreement through statistical analysis, this study also identified cards with scores below 4 (not inclusive) by more than 20% of interviewees, meaning that more than 20% of interviewees strongly disagreed with that design. The compiled results are shown in Table 8. There are 4 color cards and 6 facial expression image cards. From Table 8, it can be seen that cards with lower agreement do not have repeated vocabulary in the two card styles, showing that the low design agreement is not influenced by the connotation of that emotional vocabulary (e.g., the emotion is more abstract, making it difficult to present through colors and images).

Regarding the independent sample T test results of the two card styles, statistical analysis results have shown that among the two card styles, the “facial expression image” cards have significantly higher agreement than the “color” cards ($F = 0.374$; $p = .001 < .05$). This result indicates that “facial expression image” cards ($M = 5.71$, $Sd = 0.68$) seem to receive more understanding and agreement than “color” cards ($M = 5.40$, $Sd = 0.61$) from interviewees, as vocabulary combined with images and colors can help users grasp the meaning of that emotion more quickly.

Table 8

Summary Table of Cards With Scores Below 4 (Not Inclusive) by More Than 25% of Interviewees

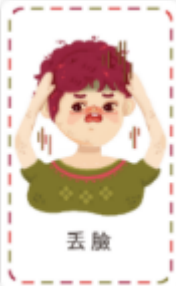
Group	Vocabulary	Cards with Scores Below 4 (Not Inclusive) by More Than 20% of Interviewees	
		Color (N = 91)	Facial Expression Image (N = 92)
Comfort	Relaxed		
Happiness	Grateful	25	
Shame	Humiliated		29
	Guilty	21	
Sadness	Disappointed	21	
	Lonely		18
	Suffering		22
Disgust	Bored	21	
Fear	Anxious		
Anger	Jealous		33
Other Negative	Empty		19
	Ambivalent		23

Summarizing the above research results, there are 5 color cards that need adjustment (grateful, envious, remorseful, disappointed, bored) and 6 facial expression image cards that need adjustment (embarrassed, lonely, painful, jealous, empty, conflicted). This study compiled interviewees' design ideas and suggestions for the above cards, and complete design suggestions compiled in Table 9. These are mainly selected from feedback from interviewees with scores of 4 or below.

Table 9

Design Suggestion Table for Cards Needing Modification

Vocabulary Card Style	Grateful	Envious	Guilty	Disappointed	Bored
					
Color	Remove purple, add more yellow or yellow-orange.	Add more purple, make the overall colors brighter.	Referring to the color adjustment of "regret", the pink tone in the lower left corner needs further adjustment.	Increase the area at the top, create a feeling of pressing down, make the color at the top heavier and darker	Can be adjusted to a single color to convey a sense of boredom, could refer to the color adjustment of "emptiness".

Vocabulary Card Style	Humiliated	Lonely	Suffering
Facial Expression Image			
	The green part needs adjustment. The sweater material is too eye-catching, will suggest changing the gesture to covering the face.	Can refer to the image of “lonely”, reduce the feeling of messiness.	Need to change the action, including not a head-holding posture, maybe change to arms folded across chest, eyes don't necessarily need bloodshot appearance. For the color part, perhaps deepen the colors, add more gray-black.
	Jealous	Empty	Ambivalent
			
	Change the eyes to looking sideways, cross the arms, don't add red to the nose tip. Besides purple, can add more red.	Too similar to “bored”, too much gray is instead misleading. Should reduce unnecessary symbols, the eyes should be emptier.	Looks too much like thinking which suggests confusion, doesn't have a feeling of conflict. Colors should have more contrast to create a sense of opposition, can add examples of conflicting images, or directly present opposing objects.

From the interview results, it can be found that interviewees' perceptions of emotional colors and facial expression images mostly come from personal life experiences and impressions. This is especially so for colors as some interviewees mentioned that their personal likes and dislikes for certain colors would affect their perception of emotional colors. Furthermore, interviewees also responded that the two card styles each have advantages and disadvantages, and are thus possibly suitable for different groups and different emotional issues, which also echoes why text cards, color cards, and image cards coexist in the market. Additionally, most interviewees believe that if the function of cards is to become aware of emotions, recognize emotions, or express emotions, the 62 cards should have different visual designs as much as possible, helping users distinguish between emotions and make comparisons.

Discussions

Card Design

Some interviewees suggested that the gradient form of color cards (linear direction from top right to bottom left) doesn't have to be limited to just one type and can have more variations to match the connotation of emotional vocabulary, such as concentric circle gradients, radial gradients, or even vertical gradients or parallel gradients can be tried. Moreover, some emotions can use a single color, two or more gradient colors to express based on emotional vocabulary.

Facial expression image cards focus on the combination of elements such as expressions, actions, and backgrounds in 62 cards, which need to be different from each other. However, when facial expression image cards were initially designed, because of adhering to the design guidelines' results (only focusing on changes in facial expressions), it led to insufficient variation in the expressions and actions of the figures, causing some cards to not gain agreement from interviewees. This result showed that when establishing design guidelines in the 2022 research, the facial expression image elements provided to subjects were not sufficiently comprehensive and diverse (especially lacking discussion of hand gestures, which can effectively help express emotions), resulting in slightly insufficient image variation when entering the formal card design phase, hence it was only able to get possible feedback for improvement through interviewee feedback.

Recruitment and Collection of Interviewees

This study originally planned for a 1:1 male to female ratio of interviewees. However, during the recruitment process, male interviewees were difficult to recruit, so in line with market conditions, female participation was increased and male participation was reduced, resulting in a final gender ratio which deviated from the original plan. In addition, the proportions of interviewees for the two card styles were almost close in terms of “whether they have an art design background” and “whether they have used emotion cards before,” thus effectively controlling the differences between interviewees for the two card styles.

Content Validation of Emotional Color and Facial Expression Design

After content validation and interviews for each card style, the research results found that interviewees agreed more with the design of “facial expression image” cards. Researchers infer that this order precisely highlights the degree of abstraction of the two card styles, with facial expression visual design being more figurative and color being more abstract, which may be the reason for the significance in statistical analysis results.

Overall, the designs of both card styles received affirmation from most interviewees. Based on statistical analysis data, a total of 11 card designs need adjustment (5 color cards and 6 facial expression image cards), which is only about 8.9% of the total 124 cards. It is worth noting that the vocabulary of these 11 cards are all different, indicating that inappropriately designed cards are not influenced by the difficulty of emotional vocabulary content, but mainly by whether the designer can effectively transform design guidelines into visual designs that align with user cognition.

Conclusion and Suggestions

After content validation by interviewees, the designs of most cards in the two styles designed by this study (color, facial expression image) received agreement from interviewees. Only 11 cards clearly needed design adjustments, with color cards accounting for 5 (grateful, envious, remorseful, disappointed, bored) and facial expression image cards accounting for 6 (embarrassed, lonely, painful, jealous, empty, conflicted). After suggestions and feedback from interviewees, most of the possible modification directions (including adjustments to colors and facial expression images) have clear modification solutions.

The facial expression images ultimately received higher overall agreement, which was presumably related to the degree of concreteness of the cards. The concreteness of cards can to some extent help users recognize and understand the connotations, arousal levels, and pleasure levels of different emotional vocabulary. In comparison, color cards are indeed more abstract and less concrete in guiding the connotations, arousal levels, and pleasure levels of emotional vocabulary, instead relying on users' personal experiences and imagination. For individuals who do not understand their own emotional states, they might not be able to effectively answer personal emotional distress problems. But from another perspective, color cards, precisely because of their abstraction, possess broader projection and expression capabilities.

This study mainly focuses on content validation and usability evaluation of the visual design of emotion cards. Future in-depth research and exploration can be conducted on the following issues:

1. Re-validation of the content of modified card designs in this study to confirm the possibility of future printing and publication.
2. Research related to the application of visual design guidelines for emotion cards or practical application of cards, such as feasibility studies on applying the design guidelines of this study to different age groups, different card designs (such as separating words and images), and validation of usage methods.
3. Research on the actual application of this study's emotion cards in counseling and guidance cases or emotional education.

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