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Using the Associative Imagery Technique in Qualitative Health Research: The Experiences of Homecare Workers and Consumers

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Abstract

The associative imagery technique is a qualitative tool with which researchers use carefully selected photographs or images to trigger participants' responses to explain difficult behavioral and social concepts. In this article, we describe the development and implementation of the associative imagery method in focus groups to understand the complex relationships between homecare workers and their clients as part of a larger health and safety intervention project conducted by the National Institute for Occupational Safety and Health. A total of 116 homecare workers and clients were recruited for the study. We found that participants used images mainly in two ways. First, the images served to remind participants of specific persons, events, and/or objects. Second, the images facilitated recollections and reflections that allowed participants to metaphorically describe their experiences, feelings, and emotions. Both usages of imagery generated comments that answered the research question in a more relevant, descriptive, and vivid way.

Keywords

focus groups; occupational health; relationships, research; research, qualitative

Personal and home care aides (hereafter referred to as homecare workers) provide routine personal care services and housekeeping to elderly, disabled, chronically ill, or cognitively impaired individuals (Denton, Zeytinoglu, Davies, & Lian, 2002). As providing homecare is one of the fastest growing occupations in the United States, the number of homecare workers is projected to increase by 50% between 2008 and 2018 (Bureau of Labor Statistics, 2010). The homecare workforce comprises mainly women (about 90%) and racial/ethnic minorities (about 50%; Montgomery, Holley, Deichert, & Kosloski, 2005). The work environment is physically and emotionally demanding as well as socially isolating (Bureau of Labor Statistics). Homecare workers face multiple work-related hazards such as overexertion, blood-borne pathogens, chemical exposures, stress, violence and abuse, and transportation-related risks (Department of Health and Human Services, 2010).

To address health risks of homecare workers, the National Institute for Occupational Safety and Health (NIOSH), in collaboration with community and research partners, has been conducting a community-based participatory research project (starting in 2006 and expected to end in 2012). The main goals of the project are to identify health risks and design intervention programs (e.g., educational materials and social marketing campaigns) to improve health and safety among homecare workers and their clients. More details of the project have been reported elsewhere (Gong, Baron, Ayala, et al., 2009; Gong, Baron, Stock, & Ayala, 2009).

The target populations of this study are homecare workers and their clients in Alameda County, California, enrolled in a publicly funded program called In-Home Supportive Services (IHSS). This program provides homecare services to low-income residents aged 65 or

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older and the disabled using a consumer-directed model in which the clients (called "consumers" under this model) hire, train, and supervise their homecare workers. The consumers are permitted to hire family members.

Conducting research on homecare workers presents multiple challenges, including the multicultural, multilingual, and low-status nature of both the workers and their consumers, the complicated worker–consumer relationship, and the unique work environment (which is also the consumer's home). These challenges call for the application of innovative research approaches and methodologies that will facilitate data collection to improve our intervention's effectiveness.

In this article, we describe how we developed and implemented an innovative qualitative method used in focus groups, the associative imagery technique, to understand the complex worker–consumer relationship. In the following sections, we first present a brief history of using imagery as stimuli in qualitative research and then describe our development and application of the associative imagery technique to better understand the experiences of homecare workers and consumers.

A Brief History of Projective Techniques, Photolanguage, and Associative Imagery

The technique of using images or photos as stimuli originated in the field of clinical psychology. The earliest version can be traced back to projective techniques used in clinical psychology, where respondents were asked to interpret visual stimuli because they tended to project their own personalities onto the stimuli (Strickland, 2001). Some examples are the Rorschach Test and the Thematic Apperception Test, created in the 1920s and 1930s (Strickland). Later, market researchers borrowed projective techniques to gain a deeper understanding of respondents' thoughts, feelings, and fears of particular market products (Boddy, 2005; Bystedt, Lynn, & Potts, 2003).

Based on projective techniques, a more specific method, the photolanguage process, was developed in the 1960s for use during counseling and therapy (Bessell, Deese, & Medina, 2007). A research team in France used black-and-white photos to promote verbal communication among teens who had trouble expressing themselves (Vacheret, 2005). Since then, researchers have utilized this method with a variety of populations including adolescents with cognitive challenges, students, low-literacy populations, and general adults (see a review by Bessell et al.). Researchers have used this method in diverse cultural settings such as Australia, the Philippines, the United States, and so forth (Akeret, 2001; Bessell et al.). Recently, the photolanguage process has been used as a tool for programmatic evaluations (Bessell et al.; White, Sasser, Bogren, & Morgan, 2009)

Although black-and-white images are mostly used in clinical psychology and program evaluations, color images are widely used in marketing (Hofstede, Hoof, Walenberg, & Jong, 2007) and health communication research (Houts, Doak, Doak, & Loscalzo, 2006). Educational researchers have found that color photographs facilitate viewers' comprehension (Readence & Moore, 1981). For the purposes of our research, we used color images to facilitate comprehension and elicit lengthier, richer responses. After a careful review and synthesis of previous literature, we defined the associative imagery technique as follows: a qualitative data generation method that uses carefully selected color images to enable participants to associatively and/or metaphorically organize their thoughts to reenact abstract concepts. Specifically, we intended to use the associative imagery technique to elicit respondents' emotions, stimulate their memory, promote their imagination, and facilitate communication and interactions in small groups (Bessell et al., 2007; Bystedt et al., 2003; White et al., 2009). Respondents were expected to link images, metaphorically or associatively, to their memories and emotions.

Using the Associative Imagery Technique for Homecare Workers and Consumers

To develop a successful intervention program, we first needed to identify major attitudes and concerns of homecare workers and their consumers toward health and safety on the job. This included understanding how the relationship between workers and consumers can create potential barriers and facilitators to the intervention. Therefore, as part of our formative research, we planned to conduct focus groups with consumers and homecare workers, respectively, to gain insights into their relationships. Given the nature of the power relationship between consumers and homecare workers, we conducted separate focus groups so that both parties could feel more open to voice their thoughts and concerns.

After a careful literature review on innovative methods for focus groups, we decided to apply the associative imagery technique instead of using the traditional direct question–answer format (Krueger, 1994). Several reasons justified the use of associative imagery instead of traditional methods. First, because describing the homecare worker–consumer relationship can be a sensitive and sometimes difficult subject, we used the associative imagery activity to elicit lengthier and more descriptive responses. Second, given that our target

population was multiethnic and multilingual with a range of literacy levels, picture-based activities were appealing because pictures are better at transcending linguistic and literacy boundaries. Research has demonstrated the effectiveness of picture-based techniques with low-literacy and low-status populations (e.g., the homeless; Bessell et al., 2007).

Homecare workers on average have low educational levels (Delp, Wallace, Geiger-Brown, & Muntaner, 2010), whereas consumers are elderly and disabled individuals who have cognitive and/or physical challenges. Finally, we decided to use the associative imagery activity as an icebreaker. We thought that this was a creative way to start the 2-hour focus groups to grab the attention of participants and to facilitate communication. Based on these rationales, we selected pictures that might elicit a broad range of emotional responses. For example, a picture of blooming daisies might symbolize a happy relationship full of hope, and a small island in the middle of the ocean might symbolize isolation. Such possible symbolic meanings were intended to stimulate more memories and create strong emotional reactions.

Method

The challenges of using associative imagery included how to select images, how to explain the intentions of the activity to a group, and what associated questions (trigger questions) to ask. To navigate through these challenges, we adopted an iterative process for picture selection, question development, and pilot testing (i.e., informational interviews and pilot focus groups). After these initial steps, we applied the associative imagery method to formal focus groups with homecare workers and consumers. Below we first describe the study participants and then explain each step in the process.

Study Participants

Recruited with the assistance of the Service Employees International Union and Public Authority for IHSS in Alameda County, English-, Spanish-, and Chinese-speaking homecare workers and consumers participated in the study. A total of 22 participants were recruited for the pilot testing stage, and a total of 94 participants participated in the final 10 focus groups. Among the 94 participants, 33 (35%) were in English focus groups, 29 (31%) in Spanish focus groups, and 32 (34%) in Chinese focus groups. A total of 41 (44%) were consumers and 53 (56%) were homecare workers. The vast majority (85%) were women. Every participant received a $20 to $40 supermarket voucher as reimbursement. The project was approved by both the NIOSH and the University of California, Berkeley Institutional Review Board.

Picture Selection

In selecting pictures, we followed guidelines suggested by professional program evaluator consultants, marketing experts, and health communicators (Bystedt et al., 2003; Houts et al., 2006). These guidelines include the following:

1. Pictures (including photographs and illustrations) need to be colorful and dynamic.
2. Pictures should be representative of a wide range of emotional choices.
3. Pictures with humans and specific topics should be avoided because literal and "rational" thinking might stifle original comments.
4. All pictures should be in consistent format, with the same image size and quality for objectivity.
5. There should be at least one to two images per person so participants can have a wide range of choices.

Based on the above guidelines, we selected pictures by first entering search words such as *colorful, dynamic*, and *interesting* in Google Images (www.google.com). These searches yielded a variety of quality photos that we were able to download at no cost. From these images, we created duplicate sets of photo-quality prints to ensure that there were enough photos for the activity. In addition, we laminated the printed images to ensure their integrity throughout the focus group process.

Development of the Trigger Question

The development of an appropriate question is very important because it frames how a participant responds to selected pictures. We intended to capture specific feelings and emotions that resulted from interactions between consumers and homecare workers as they worked. We also knew that not all interactions were work related but that these interactions were equally important to our understanding. Throughout the pilot testing stage, we refined the trigger questions. We describe the iterations of the trigger questions in the results section.

Pilot Testing in Informational Interviews and Focus Groups

To pilot test the associative imagery technique, we conducted four informational interviews involving seven workers and three consumers. The interviews lasted about 10 to 20 minutes. In addition, we conducted two pilot focus groups, one with five workers and the other with seven consumers. The pilot focus groups were about 20 to 40 minutes long. The purposes of the pilot testing

were to aid in the final selection of photos, refine the trigger question, test responses to selected photos, and obtain feedback on the activity itself. The pilot focus groups also allowed us to test this tool in a formal focus group setting and its effectiveness as an icebreaker.

Formal Focus Groups

After pilot testing, 10 formal focus groups were conducted, six of which were with homecare workers (two in English, two in Spanish, and two in Chinese) and four with consumers (two in English, one in Spanish, and one in Chinese). English, Spanish and Chinese languages were used because they are the three major languages in our target populations. The focus groups covered a range of topics related to health and safety of homecare workers and consumers, and the associative imagery activity was used as an icebreaker activity. The average focus group lasted 2 hours, and the associative imagery activity lasted about 10 to 20 minutes. In each focus group, two identical sets of 19 photographs were spread out on a table. The facilitator asked the trigger question, instructing each participant to select the picture that best represented how he or she felt when interacting with his or her homecare worker or consumer. After this icebreaker activity, we included other, more specific activities and questions that asked about specific hazards on the job and barriers to improving health and safety for homecare workers and consumers.

Analysis

Data collected at the pilot testing stage were audio-recorded. Interviewers provided detailed notes on the interview content, observations, and lessons learned from each pilot interview/focus group. Formal focus groups at the final stage were audio-recorded and transcribed verbatim in original languages. We imported transcripts to NVivo 9.0, a qualitative data analysis software program (QSR International, 2010). Two bilingual researchers (one English and Spanish and the other English and Chinese) analyzed the data in NVivo and translated relevant quotes related to the activity.

Data analyses were guided by grounded theory principles (Strauss & Corbin, 1998). First, we read through the transcripts to gain an overall impression of the data and see if there were overwhelming patterns. For example, even at the pilot focus group stage, we noted that many participants used these pictures to remind themselves of events and to metaphorically describe the worker–consumer relationship. As the study progressed and more transcripts were made available, we read through the data and began to code the content sentence by sentence. Indicators of categories were named and coded. The codes were then compared within and between researchers to find consistencies and differences. Categories emerged based on coding consistency. Memos were made on the emerging categories until all categories reached saturation. Through another round of intra- and inter-researcher comparison, the categories that became more central formed the axial and core categories. Eventually, five axial categories on the worker–consumer relationship and three axial categories on participants' different uses of the pictures were found. The dynamics of the worker–consumer relationship and the different uses of the pictures thus emerged as the two core categories. Subthemes also emerged in the same fashion. Two researchers met regularly to discuss, compare, and consolidate their codes. A third researcher joined the team at a later stage, mainly focusing on data analysis. A fourth researcher reviewed and provided feedback on the coding.

We used the associative imagery activity as a 10- to 20-minute icebreaker within a 2-hour focus group. Because these focus groups were the initial phase of a large-scale 5-year project, we were at the early stage of moving from selective sampling to theoretical sampling. Therefore, the associative imagery segment of the data did not have its own recursive verification (i.e., member checking or follow-up interviews) process.

Results

Results From Pilot Testing

Pilot testing of the associative imagery technique provided insights into the selection of the trigger question, picture selection, and feedback to the activity. Regarding the trigger question, we started the first interview with a question broad in scope: "Which picture that you see in front of you best represents the relationship that you have with your consumer/homecare worker?" During additional pilot interviews, we tried several iterations of the trigger question and finally refined the question to make it more explicit: "Pick the best picture that represents how you feel when you are interacting with your homecare worker/consumer." The word *interacting* was used because it was intended to capture both the work and personal relationship between the worker and the consumer.

Regarding picture selection, we found that photos that projected an obvious emotion or idea should be avoided. For example, a photograph of two dogs hugging inspired an African American woman to say, "It symbolizes our lasting friendship." Although the comments were certainly valid, we decided to delete this image from the final selection because of its predictable and evident association with friendship. In contrast, photos that were less direct and literal tended to bring forward deeper and

more nuanced answers. For example, a homecare worker picked a photo of a traffic light and commented, "This makes me think of the lack of direction that I sometimes have in my job." A consumer linked a snowy mountain range to her inability to communicate with her worker. She stated, "I chose this picture . . . because trying to communicate with my immigrant worker is very difficult and an uphill battle."

After testing the photos, the final photos were selected based on the criteria of being colorful, dynamic, symbolic, and abstract. Images that triggered direct and literal associations were eliminated (e.g., two dogs hugging). In addition, photos selected were reasonably expected to elicit as wide a range of responses as possible. Examples included pictures of a field of blooming flowers, dolphins swimming in the sea, and a sunset.

When asked to express their general impression, some pilot-test participants expressed a positive reaction to the activity. They felt that the activity was better than direct questioning because it helped them think through their own issues about health and safety. A worker described her positive feelings: "It felt good to attach my work to an image." However, one participant pointed out that not everyone would be so creative in associating images with emotions and attitudes and that instructions would need to be very clear. Indeed, in the pilot testing, not every participant understood the activity. For example, one consumer simply chose the picture that she found the prettiest. Despite these problems, at the pilot-testing stage the associative imagery activity elicited interesting and complex comments on relationships between workers and consumers.

Results From Formal Focus Groups

After finalizing the pictures and the trigger question through pilot testing, we conducted formal focus groups that included the associative imagery activity. Focus groups were conducted in three languages by English-, Chinese-, and Spanish-speaking facilitators. The main goals of the associative imagery activity were to elicit emotional responses to the complex personal interactions between homecare workers and consumers while using the activity as an icebreaker that would create a trusting atmosphere. The facilitators first gave detailed instructions to explain this activity by demonstrating the technique themselves using a picture of a gorge and a river as an example to describe a feeling or relationship of their own (e.g., feelings about being an instructor or about the relationship with one's mother). Then they asked the following question: "Please review all the pictures and think of the feeling, emotion, or attitude that you feel each one represents. Then pick a picture that you feel best represents how you feel when you are interacting with your consumer/worker."

We identified two core categories from the focus group data. One was related to "the dynamics of the worker/consumer relationships"; the axial categories included "change of attitudes," "mixed attitudes," "positive attitudes," "negative attitudes," and "interdependence." It is out of the scope of this methodology article to present and discuss this part of the findings. The other core category was "the participants' different uses of the associative imagery"; axial categories included "do not understand activity," "object/event/person reminder," and "metaphorical thinking." Within "reminder" and "metaphor" categories, subthemes also emerged based on how the reminder and metaphor served the participants. Under the "reminder" category, "based on object in image itself" and "based on properties of object in image" were revealed. Under the "metaphor" category, three subthemes came into shape: "conventional symbolic meaning," "self-created symbolic meaning," and "mixed symbolic meaning." Because in this article we focus on the associative imagery method, we report only results from the second core category (i.e., "the participants' different uses of the associative imagery").

There were four types of responses to the associative imagery activity. Table 1 summarizes frequencies and percentages of responses by consumer/worker and ethnic groups. Among the 94 participants, 3 (3%) refused to answer the questions (viz., two Spanish consumers said that they would pass and one Chinese homecare worker said that she did not know what to say), and 7 did not understand the question (6 consumers and 1 homecare worker, about 7%). For the vast majority of participants (89%), however, the photos elicited strong emotions and sometimes very vivid descriptions of their workers or consumers and of the relationships between them. Participants mainly used the photos in two ways: More than half (57%) chose a particular picture because one or more images in the picture reminded them of an object, an event, or a person, and about 32% used images to think metaphorically to describe the relationship between workers and consumers.

When participants misunderstood the purpose of the activity, they selected a particular picture because they liked it. For example, two consumers chose a picture of daisies because they liked beautiful flowers. Quotes in Table 2 show how participants used images to remind themselves of specific objects, events, or persons. For example, a bowl of oranges reminded the respondent of her kitchen, where her homecare worker worked and brought food for her; a mushroom reminded a homecare worker of cooking mushrooms for her consumer; and an image of sunset at the ocean reminded a homecare worker of how her client liked to watch the sunset and was afraid of water and baths. Although many participants used the object in the picture itself as a reminder,

Table 1. Summary of Frequencies and Percentages of Participants' Responses to Associative Imagery Activity, By Worker/Consumer and Ethnic Groups

	Homecare Workers									Consumers								
	Event/Object Reminders		Use of Metaphors		Misunderstood		Refused		Total	Event/Object Reminders		Use of Metaphors		Misunderstood		Refused		Total
Ethnic Groups	*n*	%	*n*	%	*n*	%	*n*	%	*n*	*n*	%	*n*	%	*n*	%	*n*	%	*n*
English	7	47	8	53	0	0	0	0	15	9	50	5	28	4	22	0	0	18
Spanish	14	88	2	13	0	0	0	0	16	6	46	3	23	2	15	2	15	13
Chinese	3	14	17	77	1	5	1	5	22	1	10	9	90	0	0	0	0	10
Total	24	45	13	25	1	2	1	2	53	16	39	17	44	6	15	2	5	41

N = 94. Percentages might not add to 100 because of rounding.

other participants made use of properties of the object presented in the image. For example, the oranges reminded one consumer of her homecare worker squeezing orange juice for her. In contrast, the color and feel (brightness, warmth) of the oranges in the same picture reminded another consumer of her kitchen with the homecare worker in it cooking for her.

Other participants selected images to metaphorically describe relationships between workers and consumers. Table 3 presents some illustrative quotes to demonstrate the metaphorical use of images. For example, butterflies and dolphins represent caring, friendly, and harmonious relationships, cactuses in a dessert signify codependent relationships, geysers symbolize hierarchical relationships, and daisies and pyramids stand for a changing nature of the relationship from feeling mysterious and unfamiliar to more comfortable with the caretaking work.

Some of the metaphoric meanings were more conventional and generally accepted by either their own culture or across different cultures. For example, the desert is a lonely place, symbolizing the lonely life of the consumer without the help of the homecare worker. Other metaphoric meanings were uniquely created by the participants. For instance, a butterfly was used as a symbol of friendship and caring for others. In this self-created metaphor, the participant defined her own concepts and established her own meaning. Still others mixed the conventionally accepted metaphoric meaning with self-created symbolic meaning. A good example is the worker who chose a picture of dolphins and described how dolphins and humans can be friends, just like consumers and workers can exist in harmony. Building on this metaphor of a harmonious relationship, the participant also projected additional meaning by stating that dolphins, like consumers, need to be trained and their certain characteristics need to be tolerated.

It was intriguing to observe how the same picture could be used by participants in very different ways. For instance, a picture of daisies elicited several different reactions. The first type of response used the image as an object, person, or event reminder. For example, the flowers reminded a Spanish-speaking homecare worker of the planters and plants in her consumer's garden and how she was requested to water plants every day. The second type of response was to use the pictures more metaphorically, allowing the flower images to symbolize different kinds of relationships. For one Chinese-speaking homecare worker, it represented a codependent relationship "like flowers and leaves." For another Chinese-speaking homecare worker, daisies represented a changing process from an unfamiliar relationship that made her feel nervous (i.e., when daisies were "small buds") to a very harmonious relationship that made her feel comfortable (i.e., when daises were blooming).

Similarly, there were also many other instances of the same image generating very different reactions. For example, a picture of oranges reminded an English-speaking consumer of her worker preparing the food that she liked, whereas it prompted a Spanish worker to think about the sometimes sweet and sometimes bitter or sour relationship with her consumer. A picture of a geyser reminded an English-speaking homecare worker of the consumer's explosive personality, whereas it triggered a Chinese homecare worker to describe the hierarchical relationship between homecare workers and consumers (for quotes, see Tables 2 and 3).

The above examples from Tables 2 and 3 demonstrate different usages of images by participants. Additional analyses of results presented in Table 1 indicated that these different usages tended to vary among English-, Spanish-, and Chinese-speaking groups as well as consumer vs. homecare worker groups. Broadly speaking, most English- and Spanish-speaking participants used images in both ways (as reminders of persons, objects, or events and as metaphorical thinking), whereas the vast majority of Chinese-speaking participants used them as

Table 2. Using Images as Object/Event/Person Reminders

Image	Object/Event/Person Reminder	Usage Type	Selected Quotes	Language Group	Consumer/Worker
Orange	Object reminder: Kitchen	Property of object in image: Color, feel	"Okay, this is very sunny and very bright and it sure looks like my kitchen when my girl was here there was plenty of food . . . she sees . . . that I eat well and these certain here are all wonderful, warm, edible oranges."	English	Consumer
Sunset at the ocean	Person reminder: Homecare worker	Property of object: Sunshine, warmth	"I have a very good worker and she brings lots of sunshine into the apartment. Very pleasant, she takes me back and forth."	English	Consumer
Umbrella	Event reminder: Bringing umbrella	Object in image itself	"She [homecare worker] brings her two daughters and then these umbrellas represent these girls, because they say to me, 'Come on, Grandma, and your umbrellas.'"	Spanish	Consumer
Orange	Object/event reminder: Orange and squeezing orange juice	Object in image itself	"I'd like to talk about the picture of the oranges, because I like oranges, and my homecare worker squeezed orange juice for me."	Chinese	Consumer
Sunset at the ocean	Event reminder: Looking at the sun and being afraid of water	Object in image itself	"I also remember because she likes to look at the sun a lot . . . and also because she was afraid of the sea, she was very afraid of the sea, of the water . . . even when she had to bathe. It was a lot of work to bathe her."	Spanish	Homecare worker
Daisies (flowers)	Object/event reminder: Flowers in the garden and watering plants	Object in image itself	"I grabbed these flowers because the woman had many planters and many plants and she lived in an apartment with her grandson. The apartment belonged to her grandson and she lived with him and she had me water the plants daily, not now when it's hot, but daily. So she would go outside, but it pleased me that she went outside, and she would go outside and she would pick her herbs, and take out the trash and all of that. And she would walk around, walk slowly. . . . And she would say, 'Go water the plants, water them daily.' So fine, I would go and water them. She didn't order me either, and it's good, and it's sweet too. . . . And that's what I remember about her, that every day she wanted me to water the plants, to water the flowers, flowers, flowers, and I would say to her, 'That's okay.'"	Spanish	Homecare worker
Mushroom	Object/event reminder: Cooking mushrooms	Object in image itself	"This is a picture of grass and mushroom. My client likes mushrooms and I cook mushrooms with meat and onions for him. That's it."	Chinese	Homecare worker

Table 3. Using Images as Metaphors

Image	Metaphors of Image	Usage Type	Selected Quotes	Language Group	Consumer/ Worker
Butterfly	Relationship between homecare workers and consumers has a sense of comradeship and unity, which is like butterflies who fly together and feed little ones	Self-created symbolic meaning	"The creation of the butterfly has an importance. The feeding, the comradeship, the unity . . . because between the butterflies, they do not kill and she brings food for the little one, when they fly, they always fly the same way—that's my opinion."	Spanish	Consumer
Cactus	Homecare workers bring vitality to consumers like cactuses to the desert	Conventional symbolic meaning	"Desert . . . this is a cactus. Because we're sick and old, I sometimes feel that I live in a desert. With my homecare workers we depend on each other, which is like the cactus growing in the desert. While it's barren and dry there, there is still some vitality."	Chinese	Consumer
Carousel	Relationship between homecare workers and consumers can have mood swings just like a carousel	Less used, but still conventional	"I picked this picture because there are like three mood swings . . . one minute we are in a good mood and the next minute it is something different."	English	Homecare worker
Orange	Relationships are sometimes sweet and sometimes sour, like oranges	Self-created symbolic meaning	"As in any job, there are time[s] that it seems like a sweet orange and other times like a sour one."	Spanish	Homecare worker
Dolphin	Relationship between homecare workers and consumers are harmonious like the relationship between dolphin and mankind	Mixed: Friends (conventional) and training (self-created)	"This is a dolphin. Dolphins and mankind are in harmony. But you need to train them and tolerate them. And you shouldn't be afraid of water. . . . You won't be afraid if you understand [the elders'] characters. We'll all cooperate and be in harmony."	Chinese	Homecare worker
Daisies	Homecare workers and consumers are codependent just like flowers and leaves	Conventional symbolic meaning	"I feel that the relationships between our clients and us are like flowers and leaves. Without leaves the flowers are not good and vice versa. You should be caring, and he should be understanding."	Chinese	Homecare worker
Geyser	Consumers are above the homecare workers in their position just like a geyser is above the ground	Self-created symbolic meaning	"Now, after seeing this picture, I put the elders as priorities. My own position is below theirs. He is the geyser, above the ground. If I put the elders as the top, and consider myself lower to them, my work would be smoother. I would do whatever they ask me to do. I would obey them. For the two hours, I would do shopping if they want me to do shopping; I would bathe them if they want me to bathe them; I would cook; I would finish two hours of work and leave happily. It would be very difficult if you argue with them. If I put 'obey everything you say' and put you at the top, like the geyser always above me, there's nothing left for us to argue."	Chinese	Homecare worker
Daisies	Relationship between homecare workers and consumers is like the changes of the flowers, closed in the beginning and blooming in the end	Mixed: Growth (self-created) and bloom (conventional)	"[My relationship] with the couple that I care for is like the daisies. When I started the job, it's like the daisies are still small buds, and I was nervous. Gradually under careful cultivation, our relationship changed, just like the blooming daisies, very beautiful, very beautiful. Now I have a very good relationship with my consumers."	Chinese	Homecare worker
Pyramid	Relationship between homecare workers and consumers is like the pyramid, mysterious at first, and more familiar gradually	Conventional symbolic meaning	"It is very mysterious what is inside the pyramid, which is like the relationship between people without communication—you wouldn't know what is inside other people's mind. When you first start working at someone's home, it is all strange environment and you don't know what it's like. After a while you would know." (Facilitator: "After you enter into [pyramid] you then know.") "Yes. You don't know what is hidden inside the pyramid. Besides, the pyramid is huge and you should learn to adapt yourself to it slowly, just like when something happens between two persons, you should learn to be understanding. . . . It is not easy to go inside the pyramid, and you need to do it little by little."	Chinese	Homecare worker

metaphors to relationships. Except for the Chinese groups who overwhelmingly used metaphors, homecare workers and consumers were roughly split in using images as both triggers for reminders and metaphors, with reminders being the mainstream usage.

Discussion

The associative imagery technique can serve as a powerful tool in qualitative research to elicit emotional, in-depth, and descriptive responses from participants. As a component of a larger project to develop homecare worker health and safety intervention programs, we applied the associative imagery process in focus groups to assist us in understanding the intricate relationship between homecare workers and their consumers. The large amount of data generated by the associative imagery method provided useful information for the development of the intervention program. For example, we included a more in-depth section in our training program and educational materials discussing how to more effectively communicate concerns about safety and health. Also, the concept for the project's primary social marketing message, "caring for yourself, while caring for others," was drawn from our findings from the associative imagery process and then further refined through subsequent activities that reinforced the importance of the codependence between the workers and their consumers.

The vast majority of respondents, as we had hoped, used the images appropriately. The pictures were used by respondents mainly in two ways. First, they served as reminders of specific person, events, and/or objects. In this way, they stimulated memories and generated emotions. Second, they facilitated recollections and reflections from participants that allowed them to think metaphorically to describe their experiences, feelings, and emotions in more descriptive and more vivid ways. Both usages reflected the effectiveness of images in triggering deeper responses.

The results also showed that people not only used the objects in the images as reminders to make associations, but also made use of the properties of these objects (such as color, texture, feel). For the participants who employed metaphorical thinking, they not only relied on widely accepted conventional symbolic meanings, but also created their own unique meanings or mixed their self-created meanings with conventional symbolism. Such findings suggest that when selecting photographs for associative imagery activities, pictures should be versatile, including a wide range of possible associative and metaphoric meanings, color, texture, shades of light, degree of abstraction, and so forth, as well as allowing self-created symbolic meanings by participants.

We also found some differences in using images across language groups. Most in the English- and Spanish-speaking groups used the images to voice their evaluation of their consumers or homecare workers. For the majority of Chinese-speaking participants, however, the images triggered more metaphorical descriptions of the consumer–homecare worker relationship (which is why most of the quotes in Table 3 were from Chinese groups). Reasons for this fascinating divide have yet to be explored. We speculate that there might be cultural differences in understanding and describing employer–employee relationships or different cultural norms related to how one talks about elders. The differences could also be because of a facilitator effect, although the standardized training and uniform delivery should have minimized such effect. Additional studies could explore how to use the associative imagery approach effectively with different language and cultural groups. Investigation into the impact of culture on image responses is needed so that the images and trigger questions can be fine-tuned for maximum effects.

Results from our study shed light on the development and application of the associative imagery method. There are a few steps that researchers should take before formally implementing it in group settings. First, researchers should confirm that the associative imagery method is appropriate to address the research question. The main purpose of associative imagery is to allow participants to associate images with their memory, emotions, and thoughts to explain difficult concepts. It is particularly effective with low-status (e.g., the homeless) and low-literacy populations (Bessell et al., 2007), and useful to discuss abstract and difficult topics (Bystedt et al., 2003). Second, researchers need to carefully consider the appropriateness of trigger questions. Third, researchers should select photographs based on specific guidelines. Fourth, researchers need to plan and conduct pilot testing on the effectiveness of the images, which is a useful stage for the refinement of photographs and trigger questions. Finally, when considering using this activity with older adults, researchers might need to take extra time to ensure that participants understand the trigger question.

Researchers should also bear in mind the challenges of utilizing this method. Conducting an associative imagery activity takes more time than a traditional question-and-answer format. Picture selection is time consuming. A good set of pictures needs to be well selected, tested, and adapted, preferably multiple times, before being used with participants. The activity requires standardized training for facilitators, who need to be highly skilled and prepared to clearly explain the purpose of the activity with appropriate examples and then redirect participants to the right usage of images whenever they seem to digress.

Despite these challenges, our study demonstrated that associative imagery can be used effectively in focus groups to elicit emotional and descriptive responses so that participants can express difficult and complex concepts through detailed accounts of daily experiences. With a clearly defined trigger question, a careful selection of images, a thorough training for facilitators, a well-planned pilot testing, and a good awareness of participants' backgrounds, the associative imagery method can be an innovative and highly effective qualitative research method. This method can generate large quantities of high-quality data to gain deeper insights into the lives and thoughts of participants, especially of the underserved and less understood.

By using this technique with consumers and homecare workers, they can reflect their own experiences and voice their thoughts in a more in-depth fashion, despite their low literacy levels and consequent lack of formal training in reflective and analytical thinking. The largely untold life stories and work-related difficulties and hazards of homecare workers and consumers can therefore be uncovered to shed light on how relevant institutions might help them improve their physical and psychological well-being as well as their interpersonal work environment.

The associative imagery technique can be applied to other populations in the field of health care, especially to vulnerable population groups who have trouble expressing themselves, such as people with certain cognitive impairments, young children, senior citizens, and many more (Bessell et al., 2007). It can provide a more concrete form to highly abstract concepts and be applied to situations in which the topics are sensitive and/or difficult to talk about, for example, describing chronic pain, talking about emotional trauma, and so on. This technique might also be used in other contexts such as doctor–patient settings, nursing homes, foster care situations, and psychological consultations, where the people being served need help in opening up and expressing themselves. On the whole, the associative imagery technique, used appropriately, can be a promising research method.

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Authors' Note

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