# Bridging the Generation Gap: Improving Empathic Accuracy by Personas

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## ABSTRACT

With the aging population increasing, understanding this emerging user group is a current important topic. Past research has indicated that personas are beneficial for young designers to make inferences about the elder group, and can evoke creativity. Therefore, this research has adjusted the existing personas for better results in both aspects. This research has added the identity category to the existing personas, expecting that it would guide young designers to be aware of the identities of the video characters other than the elders, thus considering more potential needs and be able to understand the characters by their words instead of the group they belong to 17 students with design background were recruited in this research. They watch the interviews of the elders and write different versions of personas, followed by scoring through empathic accuracy process and creativity evaluation process. The results of the research indicated that, adding the identity category to the personas did enable to find more potential needs, however, it did not have any effect on empathic accuracy. Compared to the current design process that emphasizes on improving the empathy of designers in order to recognize a wider range of needs, this research suggests that improving the ability to identify needs does not necessarily require "reading minds" of the users, that is, having to fully understand the thoughts and feelings of users does not necessarily lead to creativity; by letting designers be aware of the identity categories of the group, the potential of recognizing needs can be expanded, thus bringing more possibilities to design.

**Keywords:** Persona, Empathic accuracy, Identify need, Creativity, Empathy tool

## INTRODUCTION

As the senior population continues to grow, increasing numbers of young designers are getting involved in designing for the elderly. However, many studies indicate that it is challenging for young designers to empathize with the elderly population. Current research shows that for young designers, barriers exist in designing for the elderly population, which include a lack of similar life experiences (Smeenk et al., 2017), differences in physiological limitations (Pinheiro et al, 2022), stereotypes of the elderly population (Hallewell Haslwanter, 2022), and negative attitudes towards aging (Palmore, 2015; Sargent-Cox, 2016).

Utilizing an empathy tool to understand a target audience may facilitate the process of exploring unfamiliar populations and deepen designers' understanding of these populations. Personas are a widely used empathy tool in which designers can effectively broaden their understanding of users, identify unmet needs, and establish a strong foundation for communication with the team. Furthermore, personas are an integral part of various design stages, such as problem identification, solution design, and business evaluation (Pruitt & Adlin, 2010), making them a crucial tool for user-centered design.

The use of personas as a guide enhances the comprehension of unfamiliar populations as it facilitates relating more easily to participants by imagining similar experiences through recalling their own or others' experiences or by simulating user behavior in the mind of the designer. Studies have shown that using personas can increase the number of ideas during brainstorming sessions by development teams (So & Joo, 2017) and help designers to identify the potential needs of target audiences (Haag & Marsden, 2019; Packard & Burnham, 2021).

However, the effectiveness and reliability of personas in understanding target populations have been called into question. Some designers and researchers have pointed out that personas can be easily influenced by pre-existing design goals, leading to personas that reflect the design team's expectations and prior beliefs of users and thus a failure to achieve the main goal of understanding users. This study aimed to examine whether young designers who used personas as an empathy technique could more effectively understand the perspectives of senior people, improve empathic accuracy, and be more creative.

## Influence of Personas on Understanding Users

The primary effect of personas on creativity stems from their ability to assist designers in easily transitioning to the perspective of the user. A study conducted by Haag et al. (2019) investigated the impact of personas on the empathetic understanding of designers. Designers naturally shift to the perspective of the user during group discussions, rather than focusing on their own past experiences, which leads to faster consensus. Miaskiewicz and Koza (2011) systematically reviewed the advantages of personas through the Delphi method and provided a reference list for future research as well as practical applications in projects. For designers, personas support creativity, stimulate empathy, and provide easy-to-remember material that connects user scenarios (Cooper & Reimann, 2003; Grudin & Pruitt, 2002; Sleeswijk Visser & Stappers 2007; Long, 2014). For design teams, personas can enhance effectiveness by facilitating consensus and focus among team members. They can also improve team efficiency and guide better user-centered solutions in decision-making. Furthermore, personas serve as a representation of users, allowing team members who have not yet interacted with users to empathize with them according to a persona's characteristics (Sleeswijk et al., 2007; Miaskiewicz & Kozar, 2011; Welsh & Dehler, 2012, Salminen et al., 2019).

In addition, research on user behavior is typically limited to real-time interactions with users without considering cultural and social behaviors

(Park, 2021). Personas can provide a tool for designers to expand their understanding of a user beyond the product-user interaction by including the user's broader context of life. Marcengo et al. (2009) have proposed that persona construction can be divided into two levels: the basic layer, which includes demographic information, and the context layer, which includes specific usage scenarios, user attitudes, needs, and goals. The context layer is often obtained through qualitative research methods, in which data are collected directly from users and used to gain design insights and foster creativity.

## Influence of Personas on Creativity

Previous studies have indicated that personas can enhance creativity (So et al., 2017), due perhaps to the ability of personas to elicit empathy that can evoke memories from similar situations, be it their own or their friends' (Salminen et al., 2021). This process may require empathy as a mechanism for understanding emotional material in text, and different levels of empathy affect the expression of creativity.

Furthermore, stereotypes of specific groups may also impact an individual's creativity. Studies have shown that by contemplating content that is contradictory to stereotypes, creativity could be enhanced (Gocłowska et al., 2012). This is because if an observer uses stereotypes in a creative situation, they will focus on specific and known scenarios while ignoring other possibilities. Therefore, an individual's level of stereotypes may affect their ability to extract insights from text. Creativity is important in design activities; however, for users, an extremely novel solution may not necessarily be better than a project that adequately addresses pain points. Therefore, the ability of designers to accurately infer users' ideas is crucial.

## Influence of Personas on Empathic Accuracy

Once a complete persona is established, the persona provides clear advantages for designers in terms of executing tasks and collaborating within a team. However, some scholars question the reliability of personas, mainly because the analysis of qualitative data relies heavily on the researcher's transcription and selection of content, which may lead to a lack of consistency in the connection between the original data and the persona. The creation of personas tends to be influenced by the subjective perspectives of researchers, leading to potential biases and an inaccurate understanding of the intended audience (Floyd et al., 2008; Chen et al., 2011). Therefore, many scholars hope to improve existing personas by incorporating different perspectives to reduce subjective biases and stereotypes in order to increase the connection to the real target audience. For example, by incorporating data collection methods, personas can become more accurate (Nielsen & Storgaard Hansen, 2014, Mayas et al., 2022). Nonetheless, qualitative research is currently considered the preferred method for creating personas because it is still more effective in capturing user contexts (Marcengo et al., 2009). To confirm the effectiveness of current persona implementation in allowing designers to accurately infer the thoughts of the target audience, this research employed empathic accuracy procedures as the experimental design framework.

The empathic accuracy procedure measures an observer's ability to infer the thoughts of the observed person (Ickes et al., 1990; Levenson & Ruef, 1992; Ickes, 2001). The procedure consists of three stages.

In the first stage, the target person (i.e., the elderly in our study) is recorded during a conversation or interview. The target person then watches the recording and is asked to pause the video whenever they remember a specific thought or feeling. The time of a pause point corresponds to an empathic accuracy evaluation point. In the second stage, another observer (i.e., the designers in our study) watches the recorded video of the target person. The video is paused at the time points when the target person reported a thought or feeling (i.e., the empathic accuracy evaluation points), and the observer is asked to infer the specific thought or feeling of the target person at those time points. Finally, in the third stage, multiple coders compare the content reported by the target person at all given pause points to the inferences made by the observer at the same time points. The coders then rate the matches between the target person and the observer. Matches are rated on a three-point scale according to the similarity of the content reported by the observer and the target person, with a third-party assessment of 0–2 points. The higher the score, the higher the observer's empathic accuracy.

In summary, this research hypothesized that using personas would be beneficial in enhancing creativity and empathic accuracy and that the effects of both would be influenced by an observer's level of empathy and prior stereotypes toward the target group.

## METHOD

This study recruited 17 college students with design backgrounds. Because previous studies had indicated that the accuracy of the observer's empathy is affected by stereotypes and empathy attributes of the observed population, the participants were required to fill out the Chinese version of Kogan's attitude toward older people scale (C-KAOP) (Kogan, 1961; Yen, 2009) and the Chinese version of Interpersonal Reactivity Index (C-IRI) (Chiang, 2014) before the experiment. C-KAOP aimed to measure an observer's stereotypes of older adults, which can be divided into positive and negative stereotypes, while C-IRI aimed to measure an observer's level of empathy, which can be divided into emotional and cognitive empathy.

After arriving at the laboratory, the young designers as observers were required to watch a video interview about older adults twice. In the first viewing, the designers/observers watched the standard version of the interview video to provide them with initial information about the target population (i.e., older adults), and then they were required to create personas after the video. In the second viewing, the designers watched the experimental version of the video, in which empathy evaluation pauses had been inserted. During the one-minute pauses, the observers had to infer the thoughts and feelings of the older adult during the interview. After the video, the observers were instructed to list as many challenges and difficulties as possible faced by the character depicted in the video within five minutes.

The study provided two versions of personas. The basic version included commonly shared items of personas (Idoughi et al., 2012), while the modified version included an additional field for identity information, requiring the observer to fill in the observed identity roles of the interviewee, such as mother, union member, or patient. This was intended to prevent an observer's observations from being limited to the most visible identity of the video character (i.e., merely an older adult) and thus increase the number and types of needs identified by the observer.

## MEASURING

Empathic accuracy was scored to rate similarity by two researchers with more than four years of research experience. The scoring criteria were based on the three-point scale by Ickes et al. (1990) for accuracy coding. Zero points stand for "Essentially different content", one point stands for "Somehow similar, but not the same content", and two-point stands for "Essentially the same content".

Interviewees (older adults) and the participants (young designers) were asked to resond to the same video clips. The interviewees were required to write down their "actual thoughts" and "actual feelings" at the times that the video was paused, while the participants were required to write down their "inferred older adult's actual thoughts" and "inferred older adult's actual feelings" at the times that the video was paused. There were two graders to rate the similarity of all participants' responses. The similarity rating for inferred thoughts is defined as the accuracy of thought empathy, and the similarity rating for inferred feelings is defined as the accuracy of feeling empathy. The scorer reliability used in this study was Kendall's coefficient of concordance, which was $W = .73$ ($p = .00$).

In this study, scoring for recognition of needs was performed using a basic perspective of creativity, as outlined by Guilford (1966). This study built on previous research (So, 2017; Salminen, 2021) by utilizing the classification and number of needs expressed by the characters in the video as indicators of flexibility and fluency in recognizing needs. In simpler terms, a higher flexibility score meant that an observer's observations covered a wider range of aspects, while a higher fluency score meant that an observer identified more needs from the characters in the video.

## RESULT

The empathic accuracy and demand recognition results of the two types of personas shown as Table 1.

The modified group was superior to the basic group in fluency ($t = -.878$, $p = .394$) and flexibility ($t = -1.913$, $p = .075$), but the difference was not significant. However, according to previous research, the stereotype and the degree of empathy will affect the fluency and flexibility, so this study further verifies the effect by hierarchical regression (Table 2).

**Table 1.** The differences in empathic accuracy, demand recognition fluency, and demand recognition flexibility among different groups.

| | Empathic accuracy | | Demand recognition | |
|---|---|---|---|---|
| | Thought | Feel | Fluency of demand recognition | Flexibility of demand recognition |
| basic version (n = 9) | 0.67 (.31) | 0.97 (.88) | 3.56 (1.94) | 2.33 (1) |
| modified version (n = 8) | 0.49 (.38) | 0.88 (.31) | 4.25 (1.17) | 3.13 (.64) |

**Table 2.** Hierarchical effect on demand recognition of people.

| | R-Squared Change | Standardized $\beta$ |
|---|---|---|
| M1 | .076 | |
| Negative Stereotypes in KAOP | | .210 |
| Affect Empathy | | -.074 |
| Cognitive Empathy | | .121 |
| M2 | .333* | |
| Negative Stereotypes in KAOP | | .501 |
| Affect Empathy | | .123 |
| Cognitive Empathy | | -.015 |
| Persona type | | .679* |
| Overall R-Squared | .409 | |
| N | 17 | |

*p <.05 **p <.01 ***p <.001

Examining the prediction effects of persona type and moderator variables on the scores of demand identification flexibility and fluency by hierarchical regression (Table 3). The results showed that the negative stereotype, Affective empathy, and cognitive empathy of elderly people only explained 7.6% of the variance of the score of demand identification elasticity, $F(3,13) = .358$, p =.784, while after adding the genre of life stories for prediction, the variance increased by .333%, $F(1,12) = 6.767$, p =.023. Therefore, it is inferred that the use of life stories can significantly predict the prediction

**Table 3.** Hierarchical effect on thought empathy of people.

| | R-Squared Change | Standardized $\beta$ |
|---|---|---|
| M1 | .486* | |
| Negative Stereotypes in KAOP | | .612* |
| Affect Empathy | | .310 |
| Cognitive Empathy | | -.015 |
| M2 | .007 | |
| Negative Stereotypes in KAOP | | .653* |
| Affect Empathy | | .337 |
| Cognitive Empathy | | -.034 |
| Persona type | | .095 |
| Overall R-Squared | .493 | |
| N | 17 | |

*p <.05 **p <.01 ***p <.001

effect of the score of demand identification elasticity, that is, the subjects using the modified version of life stories can identify a wider range of demand types than the subjects using the basic version persona. However, there was no significant difference in the fluency of demand identification.

In addition, the baseline group showed higher accuracy in thinking and feeling compared to the modified group; however, there was no statistically significant difference. Further hierarchical regression revealed that the most influential variable for empathic accuracy was the stereotype of elderly people; note that the effect of persona type was not significant. Previous research indicated that when a stereotype matched reality, the stereotype was more helpful for the accuracy of empathy (Hodges & Kezer, 2021; Lewis et al., 2012). The elderly interviewees in this study focused on medical experiences, repeatedly mentioning negative experiences such as impatience with outpatient waiting times and difficulty taking medication. Although elderly people are not the only group who face these problems, the negative stereotypes of old age such as a lack of patience and difficulty living independently are still valid. Therefore, in this experiment, inferring according to the negative stereotypes of elderly people had a higher empathic accuracy.

## CONCLUSION

Personas play an important role in the design process, and past research has indicated that personas not only help designers to make inferences about user ideas, but they also guide the identification of needs. This study further discussed the impact of designers' empathy and stereotypes of a target population. Therefore, this study added identity categories to existing personas in the hope of guiding young designers to realize that the characters have identities other than merely being elderly, which could thus reveal considerably more potential demands (Hodges & Kezer, 2021). The results of the study indicated that personas with the added identity categories could indeed lead to the identification of more demands; however, there was no effect on the accuracy of empathy. In addition, the conclusions of this study were consistent with previous studies, in that when stereotypes and reality are similar, stereotypes have a significant influence on the accuracy of inference. It is therefore recommended that future research on the accuracy of empathy should list stereotypes as variables for exclusion.

Nowadays, the design process emphasizes the importance of incorporating user voices as one must first empathize with users in order to recognize their broader needs (Geher et al., 2017). This study, however, suggests that enhancing young designers' need-recognition capabilities does not necessarily need to be achieved through understanding the thoughts of the elderly; this could potentially be achieved by having designers scrutinize target groups from perspectives other than those of the elderly, which brings greater possibilities to the design. Nevertheless, this study does not explore whether inducing broader need-recognition is beneficial in finding users' most valued needs; hence, this study suggests that further exploration should examine if inducing broader needs can yield solutions that are most beneficial to users. This causal relationship awaits further research.

## ACKNOWLEDGMENT

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