



The Impact of Brand Anthropomorphism on the Willingness to Continue Using--Taking Duolingo Mascot Duo as an Example

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Abstract. In recent years, online learning platforms have received increasing attention due to their convenience and flexibility. However, the sustained usage rate of users is generally low, and how to improve long-term user retention still needs to be addressed. This article takes Duo, the mascot of Duolingo, as the research object, to explore the impact of brand anthropomorphism perception on users' willingness to continue using, as well as the mediating role of social cohesion and user value perception in it. The study collected 164 valid samples using a questionnaire survey method and conducted regression and mediation analysis using SPSS and PROCESS models. The results indicate that brand anthropomorphism perception can significantly positively predict users' intention to continue using, while indirectly affecting it by enhancing social cohesion and improving users' perceived value. Among them, the mediating role of user value perception is stronger than that of social cohesion, indicating that users' overall judgment of the value of the learning platform plays a leading role in continuous use decisions. Based on this, this article suggests that digital learning platforms should not only strengthen anthropomorphic interactive design, but also pay more attention to the visual presentation of learning outcomes and real value feedback, in order to promote users to form stable long-term usage behavior.

Keywords: Brand Anthropomorphism, Continuous Use, Willingness to Connect with Society, User Value Perception, Digital Learning Platform

1 Introduction

With the continuous development of mobile Internet and digital technology, digital learning platform has gradually become an important tool for people's daily learning. Language learning applications are widely popular among students and young users due to their low usage threshold, flexible time, and fragmented content. However, in practical use, a common problem is that many users are initially enthusiastic about using the platform, but over time, their learning frequency gradually decreases, and they may even completely give up using it. The overall retention rate of the platform is not ideal. Davis proposed that whether a user continues to use a technology mainly depends on their subjective perception of the system's "usefulness" and "ease of use", rather than

just the objective functionality of the system itself [1]. Although initially accepting information systems is an important first step towards achieving their success, the long-term feasibility and ultimate success of information systems depend on their continued use, rather than their initial use [2]. Therefore, how to enhance users' willingness to continue using has become an important issue that digital learning platforms urgently need to face.

Other past learning application studies have largely been conducted on functional aspects, including the determination of the scientific nature of the curriculum, the clarity of the learning trajectory, and the magnitude of the effect of learning. Practically, in the application involved conditions, it is hardly practical to power with only the functional benefits without explications of the emotions and the behavioral variability that users undergo in cases of long-lasting application. Over the last years, increased amounts of research have come to consider the affective and interactive experiences of the user at the stage of use, beginning with the viewpoint of user psychological experience. The process of brand-user interaction is considered to have a great influence on the maintenance of user acquisition behavior.

In this respect, the anthropomorph of the brand has been slowly transformed into a research perspective with an appeal. The brand anthropomorphism is the attribution of human qualities at a mental or emotional level to a brand or non-human object by consumers, resulting in its being perceived as conscious, emotional or intentional. This personification can be manifested in the digital platform setting in the form of a mascot image, style of language, and interactive feedback processes. A good example of personification is Duo, the brand name of Duolingo. Not only does Duo exist as a visual representation, but constantly plays a role in the learning process of the user, whether it is by expressions, tone, learning reminders among other things, which makes the user feel like he or she is being followed, replied to and even supervised.

This anthropomorphic interaction experience has transformed the customer-context of the platform to a certain degree where the experience is no longer a mere learning device, but more of an object of interaction that is engaged in the learning activity. Consequently, one would need to further investigate whether brand anthropomorphism would influence the psychological sentiments of the users hence changing the value judgments and use behavior.

It follows that this article uses Duo, the mascot of Duolingo, as a research object to investigate how the perception of brand anthropomorphism impacts the willingness to continue using it, and aims at analyzing how social cohesion and user value perception influence it.

2 Theoretical Basis and Research Hypotheses

2.1 Concept and Function of Brand Anthropomorphism

Brand anthropomorphism is regarded as a significant brand communication in the areas of consumer psychology and brand research. In the article by Eplay et al. anthropomorphism was defined as the process of attributing to non-human subjects anthropomorphic traits, meaning the ability to experience emotions, have intentions and motivations [3].

Human-likes on a brand may cause the consumer to perceive a brand as a social being causing them to react emotionally to the brand during their interactions. Brand anthropomorphism is the level of consideration of the brands products by consumers as representing human qualities and appearance to real people [4]. Anthropomorphism in the case of digital services is not only provided by the design of cartoon characters, but also on whether the brand can act on the actions of the users.

Personification design in learning applications is typically characterized by mascot images, the style of language and closed-ended response factory. Waytz remarked there is an inclination of people to socialize non-human objects, and that anthropomorphism leads to processes in the psychological mechanism peer to normal human interactions [5]. Psychological distance between the brand and the users can be reduced accordingly when they feel that the platform is making a difference that they are learning.

2.2 Sense of Social Connection

When social connectivity is said, it is the psychological bond, the feeling of consideration, the experience of interpersonal contactivity and the individual experience of the interaction, which a person experiences when she/he engages in the process. The study is dedicated to the relationship between different elements of belonging and general happiness and loneliness [6]. The past research has indicated that when people feel attached to others or objects they tend to develop consistent attitudes and choices that are sustained.

Social connectivity in the present study means the social experience that people have when they are interacting with anthropomorphic brands as perceived by the users of the brands instead of real-life social relationships. In their article, Baumeister&Leary stated that one of the primary psychological needs in human beings is the ability to establish social connections, and the absence of connection may cause the subsequent emotions of loneliness and influence the behavior within no time [7]. Thus, the possibility of anthropomorphic design to improve the feeling of being socially connected to the users is a critical aspect that influences the level of willingness of the user to apply.

2.3 User Value Perception

User value perception This is the overall rating that the users would create after considering the value they obtain and the expenses that they must face during the process of usage. Perceived value does not only determine the willingness of the consumer to buy and the outcome of the value is a result of the general perception of the product quality and the prices paid [8]. Such evaluation is not only one dimension but has a number of dimensions which include functional value, emotional value, and psychological value. Using the judgments of a product being worthy, users do not only evaluate that it is useful or not, but also that the process of using it is gratifying and the motivation to continue using the same has not worn off. Indicatively, Zeithaml stated in the literature that, users will balance their efforts and gains holistically to come up with a total value judgment [9].

2.4 Will to Persist with Usage

Continuous usage intention defines a subjective choice by the users to keep using a product or service upon the first usage. In his studies, Venkatesh combined several

technology acceptance models as they each play a role in sustaining use behavior among the users, specifically, the performance expectations, effort expectations, and social influence [10]. This is important especially when constantly used in learning programs, where learning performance may depend on long time accretion. According to an article by Limayem, it is not just the intention that drive the behavior of long term usage but also over time develops into a usage habit, which in turn strengthens the propensity to be perpetuated by usage [11].

According to the theoretical analysis mentioned above, the following research hypotheses are presented in this article:

H1: Perception of brand anthropomorphism positively influences the intention to use it again in the future.

H2: Social connection mediates brand anthropomorphism and continuance intention relationship.

H3: Perception user value mediates between brand anthropomorphism and continuance intention.

3 Research Methods

3.1 Research Design

This research will attempt to develop the perception of brand anthropomorphism and its influence on user willingness to use again, and also examine how social cohesion and user value perception can mediate the effect of this. In order to establish the above research objectives, this article employs questionnaire survey method to gather data and quantitatively analyze the subjective assessment of the user on the relevant psychological feeling and behavioral intentions when using the Duolingo.

The fundamental variables that will be used in the research are the perceptions of brand anthropomorphism, social connectivity, user value perception, and intention to use further. The independent variable among them is the brand anthropomorphism perception, the mediating variables include social connectivity and user value perception and the dependent variable is continued use intention. By quantifying the above, this research builds the route in which brand anthropomorphism is influencing the intention to continue using.

3.2 Variable Measurement

In terms of variable measurement, brand anthropomorphism perception is mainly measured by users' perception of whether Duo, the mascot of Duolingo, has human characteristics, including whether it is considered to have consciousness, thoughts, and the ability to respond to user learning behavior. The sense of social connection is used to measure whether users experience being noticed, responded to, and forming interactive relationships during their interaction with Duo. User value perception focuses on the comprehensive value judgment formed by the overall learning outcomes and user experience of Duolingo after investing time and energy. The willingness to continue using Duolingo is evaluated by measuring whether users are willing to continue and use Duolingo for a long time in the future.

All the above variables were measured using a 7-point Likert scale, where 1 represents "strongly disagree" and 7 represents "strongly agree", to improve the discrimination and reliability of the measurement results. Before the official distribution of the questionnaire, the wording of the questions was checked and adjusted to ensure clarity and ease of understanding.

The questionnaire was distributed online, and a total of 164 questionnaires were collected. After excluding incomplete or obviously invalid questionnaires, all questionnaires were deemed valid, and the sample size met the basic requirements for subsequent statistical analysis. The data organization and statistical analysis were completed using SPSS software.

The results of the questionnaire reliability analysis showed that the Cronbach's alpha coefficients of the four variables, brand anthropomorphism, social cohesion, user value perception, and continued use intention, were all higher than 0.9, indicating good internal consistency and high reliability of the scale, which can be used for subsequent analysis.

4 Data Analysis and Results

4.1 Regression Analysis Results

To examine the impact of brand anthropomorphism on social cohesion, user value perception, and continued use intention, this study used stepwise regression analysis and constructed a regression model with brand anthropomorphism as the independent variable. As shown in Table 1, brand anthropomorphism has a significant positive impact on social cohesion ($B=0.7825$, $SE=0.0546$, $t=14.33$, $p<0.001$); It also has a significant positive impact on user value perception ($B=0.7360$, $SE=0.0466$, $t=15.79$, $p<0.001$). In the regression model with continued use intention as the dependent variable, brand anthropomorphism ($B=0.2704$, $p<0.001$), social cohesion ($B=0.1753$, $p=0.0056$), and user value perception ($B=0.4912$, $p<0.001$) all have significant positive predictive effects on continued use intention. The overall model fits well, and the independent and mediating variables can explain approximately 78.98% of the variation in continued use intention. Therefore, assuming H1 is supported, that is, brand anthropomorphism perception has a significant positive impact on the intention to continue using.

Table 1. Regression analysis results of brand anthropomorphism on social cohesion, user value, and intention to continue using.

Dependent variable	Independent variable	B	SE	t	p
Social connection	brand anthropomorphism	0.7825	0.0546	14.33	<0.001
User value perception	brand anthropomorphism	0.7360	0.0466	15.79	<0.001
Continuous use intention	brand anthropomorphism	0.2704	0.0582	4.65	<0.001

Continuous use intention	Social connection	0.1753	0.0624	2.81	0.0056
Continuous use intention	User value perception	0.4912	0.0731	6.72	<0.001

4.2 Mediating Effect Test of Social Cohesion

To further examine the mediating role of social connectivity between brand anthropomorphism and intention to continue using, this study used PROCESS Model 4 for Bootstrap (5000 samples) analysis. As shown in Table 2, brand anthropomorphism has a significant indirect effect on the intention to continue using through social connectivity (Effect=0.1372), with a 95% confidence interval of [0.0337, 0.2627], excluding zero, indicating a significant indirect effect. Meanwhile, after incorporating social cohesion, the direct effect of brand anthropomorphism on the intention to continue using remains significant, indicating that social cohesion plays a partial mediating role. Therefore, assuming that H2 is supported, that is, Social connection mediates the relationship between brand anthropomorphism and continuance intention.

Table 2. Results of the Mediating Effect Test between Social Connection Sense and User Value Sense.

Path	Effect	BootLLCI	BootULCI
brand anthropomorphism → sense of social connection → willingness to continue using	0.1372	0.0337	0.2627
brand anthropomorphism → User value perception → Willingness to continue using	0.3615	0.2328	0.4817
Overall impact	0.4987	0.3831	0.6168

4.3 Mediation Effect Test of User Value Perception

To examine the mediating role of user value perception between brand anthropomorphism and continued use intention, this study also used Bootstrap method for testing. The results indicate that brand anthropomorphism has a significant indirect effect on the intention to continue using through user value perception (Effect=0.3615), with a 95% confidence interval of [0.2328, 0.4817], excluding zero, indicating that this mediating pathway is significant. In addition, after incorporating user value perception, the direct effect of brand anthropomorphism on continued use intention remains significant, indicating that user value perception has played a partial mediating role. Comparing the two intermediary paths, it is found that the indirect effect of user value perception is greater than social connectivity. Therefore, assuming H3 is supported, that is, user value perception acts as a significant mediator linking brand anthropomorphism to continuance intention.

5 Research Results

Through research, anthropomorphism has been found to be not a mere image design using visual method, but among the interactive methods that may affect the psychological experience of the user, as well as the value judgement. Thus, anthropomorphic design is one of the significant instruments to be employed in the digital learning environment in the field of practical use to increase the retention rates among the users in the long run.

To begin with, the platform may lead to the improved social interaction experience of the users, as the association between anthropomorphic roles and user learning behavior will be strengthened. As an illustration, corresponding feedback contents with the individual learning progress of the user may introduce continuity and responsiveness of the interaction thus aiding users to establish stable psychological links in their use of information instead of having temporary freshness.

The perception of users value occupies a vital place in the constant use decision-making, which implies that the anthropomorphic design should be addressed with actual learning results. The platform must not merely just offer emotional interaction but assist the user to intuitively feel the actual returns on their investment into learning by the way of the display of clear progress, the phased achievement feedback and other mechanisms that increase their motivation to continue utilizing it.

Personification strategy must be moderately used. Reminders are also not intuitive and can be a psychological burden to users with too many and too emotional reminders and can in fact be considered detrimental to the user experience. Consequently, designing anthropomorphic interactions, platforms are supposed to consider the sense of autonomy and learning pace of users and not to make anthropomorphism one of interfering factors.

In general, this paper highlights that the anthropomorphism design in online education is effective based on whether it is able to fulfill both the emotional and functional requirements of the users. The only condition where personification strategies can be generated with a consistent effect on the long-term usage behavior is where emotional connect and value perceptions are complementary.

6 Conclusion

This paper applies Duo, the company mascot of Duolingo, as the research topic in achieving the objective of exploring the impact of brand anthropomorphism on the willingness of users to use the platform further and also assesses the mediating impacts of social connectedness and perceived user value. The questionnaire data results of the mediation analysis indicate that brand anthropomorphism makes a significant positive contribution to the continuance intention of the users, but indirectly influences this by making social connection experience and the perceived value of users better. User value perception is an essential component in the general direction among them, which suggests that users have a holistic consideration of platform learning value, which is a significant factor in creating a long-term usage pattern.

The results of the research reveal that in terms of digital learning platforms, the anthropomorphic design has a stable influence only on the sustained usage behavior of users with the supplement of the real learning value. There is a need to uphold causal relationships in future studies because of constraints regarding sample size and the methodology used in research with growth of sample size or experimental settings.

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