A cross cultural comparison of virtual pet companionship in the UK and Japan

Thomas Chesney¹, Hiroko Kanoh² and Shaun Lawson³

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The Comfort from Companion Animals Scale was translated into Japanese and a survey conducted of virtual pet users in the UK and in Japan. Data were used to test the notion that Japanese users have a stronger bond of affection with virtual pets than users in the West. Our findings support this position.

Keywords
User behaviour, cross cultural study, virtual pet

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1 Introduction

This research report examines the widely held notion that Japanese users draw more companionship from virtual pets than users in the West. A virtual pet is an information system which has the goal of encouraging human computer interaction by fostering a relationship with a user, similar to the relationship between owner and real pet. The foundations of such a relationship include concepts of care, responsibility and play. A virtual pet cannot be considered to be a utilitarian system as no useful output is produced, tangible or intangible. Nor can many virtual pets easily be considered to be games
as there is no over-arching objective for the user. Studies of human-virtual pet interaction represent a growing body of work (Turkle, 2004; Eachus, 2001). Increased interest in this field appears to be justified not only by the impressive sales figures of virtual pets but also by an as yet little observed tendency among developers to imbue their software with personality. This manifests itself mainly in technology aimed at children where otherwise utilitarian electronic devices such as an electronic diary include an agent, but also in some software produced by major developers including Microsoft. Two examples from Microsoft are their now almost defunct Clippy Office Agent and now definitely defunct search agent Mrs Dewey. To date there have been few cross cultural studies in this field.

This research report offers two contributions. Firstly it presents a validated Japanese instrument for measuring companionship with animals. The English version of this construct (Zasloff, 1996) has successfully been used in virtual pet interaction studies in the past (Chesney et al., 2007) and the Japanese version may be of interest to researchers. Secondly it examines the widespread notion (MacDorman et al., 2008) that virtual pet owners in Japan have more extreme feelings toward virtual pets than owners in the West.

2 Measuring companionship

Companionship is an affectional bond (Collis and McNicholas, 1998). A user with a higher companionship score than another can be said to feel more affection than the other toward the device. The Comfort from Companion Animals Scale (CCAS) was developed by Zasloff (1996) to measure feelings of companionship with any animal, in response to the numerous scales dedicated to one particular species (Johnson et al., 1992; Holcomb et al., 1985; Lago et al., 1988). CCAS has been used before in studies of virtual pet interaction (Chesney et al., 2007) where it demonstrated good validity.

The CCAS (Figure 1) was translated into Japanese (Figure 2), then back translated by a second interpreter (Figure 3). To assess the unidimensionality of the Japanese scale, principal component analysis was performed on the data as described in Section 3, the results of which are reported in Section 4.1. Respondents are asked to state how much they agree with the 11 statements using a 4-point Likert scale with anchors from strongly agree (score of 4) to strongly dis-
1. My pet provides me with companionship 
2. Having a pet gives me something to care for 
3. My pet provides me with pleasurable activity 
4. My pet is a source of constancy in my life 
5. My pet makes me feel needed 
6. My pet makes me play and laugh 
7. Having a pet gives me something to love 
8. I get comfort from touching my pet 
9. I enjoy watching my pet 
10. My pet makes me feel loved 
11. My pet makes me feel trusted 

Figure 1: CCAS

agree (score of 1). Scores are added to give a subject’s measure of companionship. Figure 4 shows the Japanese version of the anchor points.

3 Method

Data were collected as follows. Firstly, members of Nintendog discussion forums were contacted using the forums’ private messaging facility (akin to an email), asking them to complete an online questionnaire. Secondly, a standard message was posted on Nintendog forums asking Nintendog users to complete the same online questionnaire. Nintendog forums in English attract both UK and US users, so a question on country of residence in the questionnaire was used to separate these populations. All messages to the UK/US forums were in English; all message to the Japanese forums were in Japanese. Seventeen responses were received from users in Japan and 24 from users in the UK.
My pet is my partner
Looking after my pet gives me something to care for
My pet gives me a fun activity to do
My pet is a source of stability in my life
My pet makes me feel needed
My pet gives me play and smiles
My pet gives me something to love
When I touch my pet it comforts my heart
Looking at my pet is fun
My pet makes me feel loved
My pet makes me feel trusted

Figure 2: Japanese CASS

Figure 3: Back translation

Figure 4: Anchor points (from left to right – Strongly Agree, Agree, Disagree, Strongly Disagree)
### Table 1: Summary information on respondents

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>mean</th>
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<tbody>
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<td>32.17</td>
<td>6.73</td>
</tr>
<tr>
<td>Japan</td>
<td>17</td>
<td>38.6</td>
<td>5.18</td>
</tr>
</tbody>
</table>

#### 4 Results

All analyses were conducted using R (R Development Core Team, 2009). The CCAS was designed as an additive model and as such the data it produces were therefore treated as having at least the properties of interval data.

#### 4.1 Scale validation

The Japanese companionship data were analysed by principal component analysis. One component emerged explaining 84% of the variance, with alpha = 0.98. The same procedure was carried out on the UK data and again one component emerged explaining 65% of variance with alpha = 0.94.

#### 4.2 Companionship in the East and West

The data were tested for normality using a graphical method and Shapiro-Wilk test. Figure 5 shows the normal probability plot for the two datasets which gives reasonable grounds for assuming normality. Shapiro-Wilk gave strong support for the UK data being normal, and moderate support for the Japan data. In addition, the samples are independent from each other and their variances are 45.3 and 26.8 which are close enough that the population variances may be assumed to be equal. Therefore a two sample t-test is appropriate, which was performed with results: $t = 3.3055$, df = 39, p-value = 0.002041. The p value provides strong evidence to reject $H_0$ and tentatively accept the conclusion that Japanese users get more companionship from virtual pets than UK users.
Figure 5: Probability Plots
5 Conclusion

This report has examined the widely held notion that virtual pet owners in Japan have more extreme feelings toward virtual pets than owners in the west and found that Japanese users do indeed have a stronger bond of affection with virtual pets than UK users.

References

Chesney, Thomas, Lawson and Shaun: 2007, Interaction studies; the illusion of love: Does a virtual pet provide the same companionship as a real one?, 8(2), 337–342.


