Evaluation of the web-based care-requiring client and Home Helper support system

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INTRODUCTION

We recently reported the development of a web-based care-requiring client and Home Helper support system consisting of Internet client computers with liquid crystal input tablets, wireless Internet Java enabled mobile phones and a central office server. The liquid crystal tablet is used as an entry device for the care-requiring client's care requests. When a care-requiring client enters their requests and sends them to the Home Helper central office, the system automatically transfers the information to the Home Helper's Java mobile phone.

In this study, the investigation was performed to the care-requiring client concerning the use ease of the system about the system's data entry time, the legibility of character sizes displayed on the LCD, and the comprehensibility of displayed care items.

EVALUATION SYSTEM

Fig. 1 The evaluation system of the web-based care-requiring client and Home Helper support system. The system consists of an Internet client Pentium III 1 GHz Windows computer having a liquid crystal tablet (VAIO Lx82, SONY), a wireless Internet Java mobile phone and a central office conventional Pentium III 800MHz Windows computer (FMVT80, Fujitsu) with 256 Mbyte memory, 40 Gbyte HDD and 100 base-T Ethernet LAN adapter. The liquid crystal tablet allows the care recipient to enter requests by a touch pen instead of using the keyboard. By using the stylus pen, the client chooses the required care items, as displayed by buttons on the liquid crystal tablet. There are usually three main care requests, which are a change in the visit time, shopping, and emergency call. When shopping is selected, the computer displays a list of items for purchase. The care-requiring client chooses the items, and the quantity. The server computer stores these requests and automatically transfers them to the Home Helper's mobile phone by e-mail.

Three main care requests displayed on LCD screen .

List of items for purchase request.
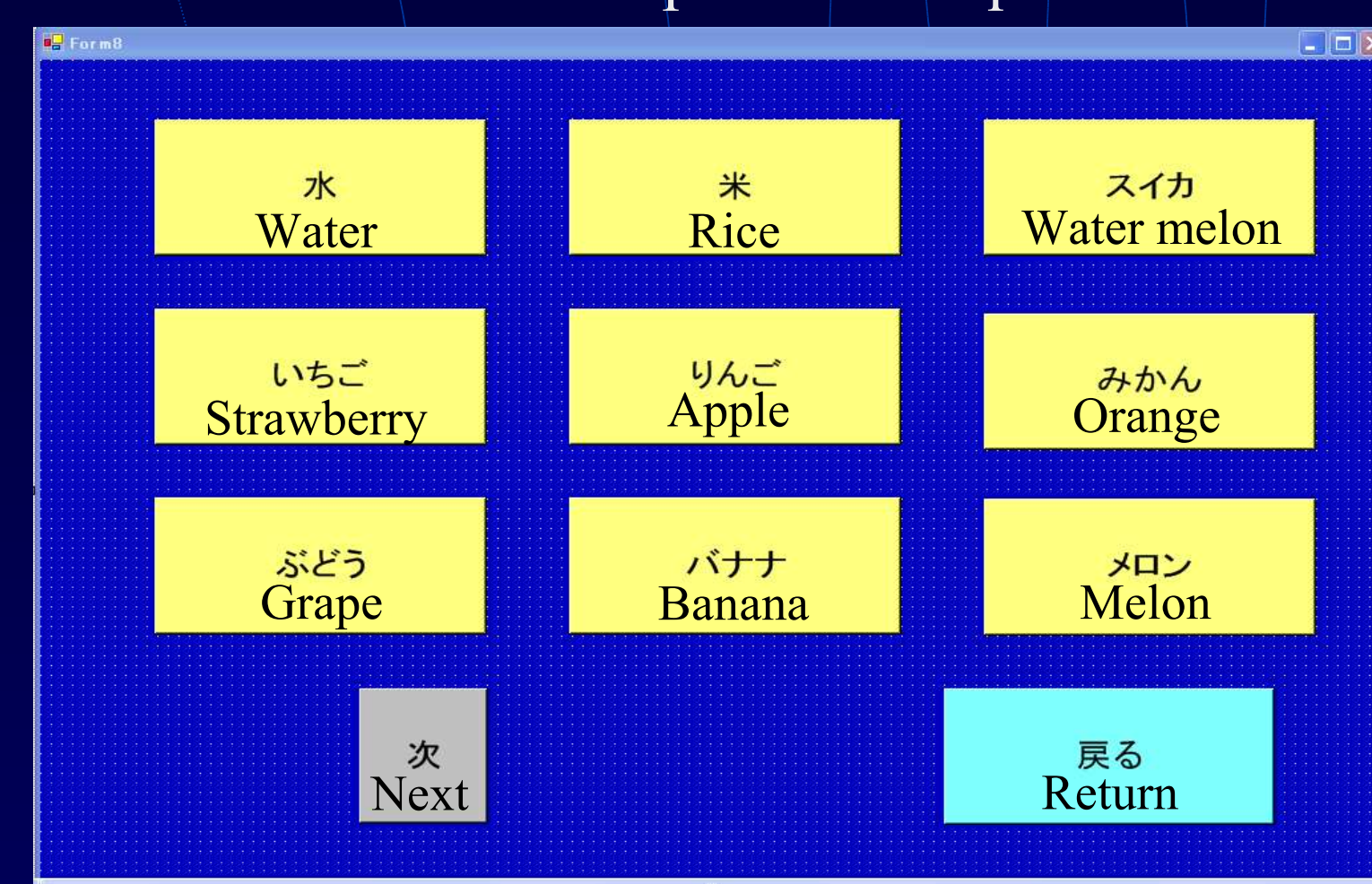
Shopping request displayed on LCD of java mobile phone.

Fig. 2 The menu displayed on LCD screen and the chosen items displayed on LCD of Java mobile phone. There are usually three main care requests, which are a change in the visit time, shopping, and emergency call. When shopping is selected, the computer displays a list of items for purchase. The care-requiring client chooses the items, and the quantity. The server computer stores these requests and automatically transfers them to the Home Helper's mobile phone by e-mail.
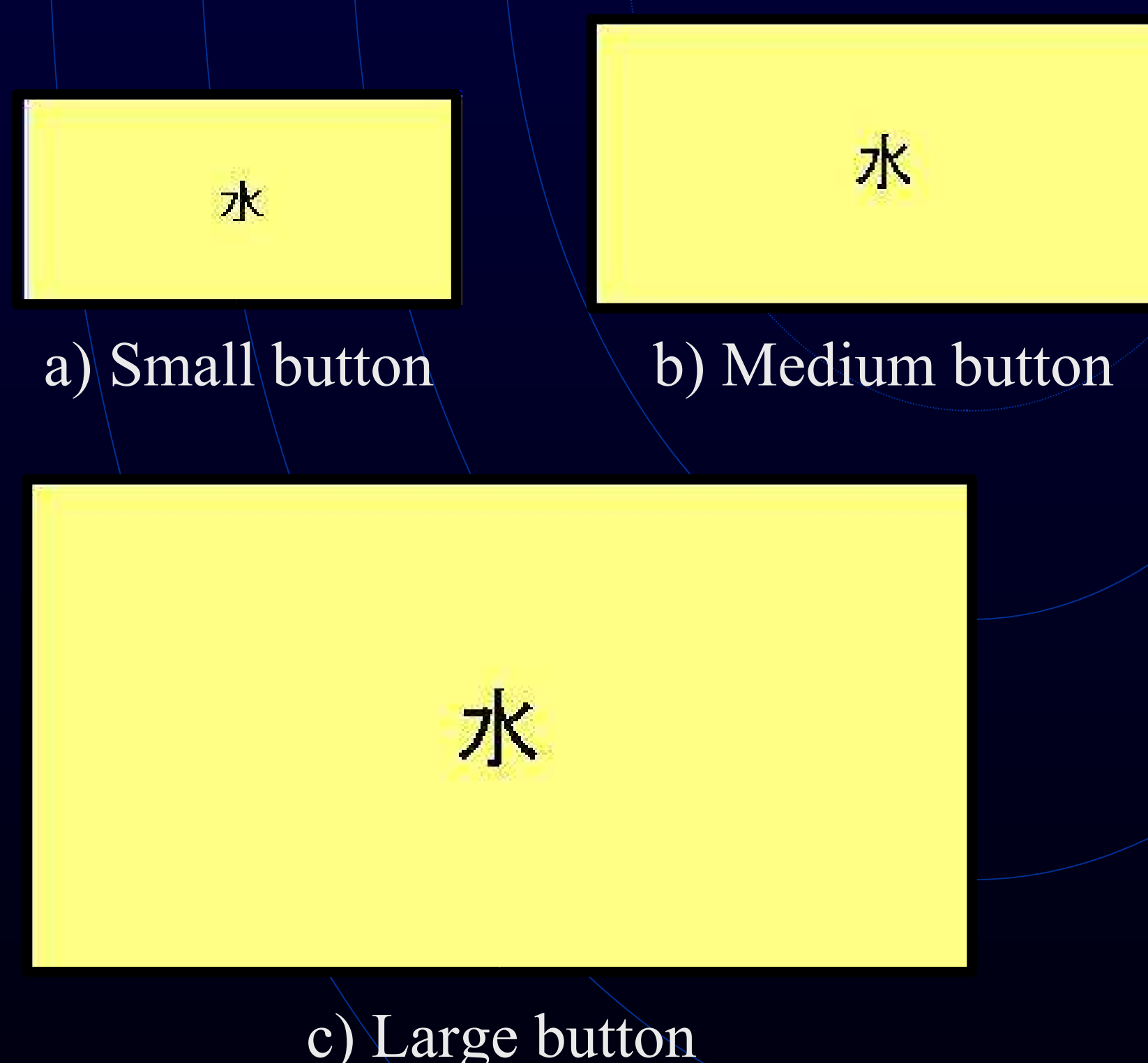

a) Small button   b) Medium button

c) Large button

Fig. 3 The three button sizes displayed on the LCD screen. The small, medium and large button sizes are 10mm x 20mm, 20mm x 40mm and 30mm x 50mm, respectively.
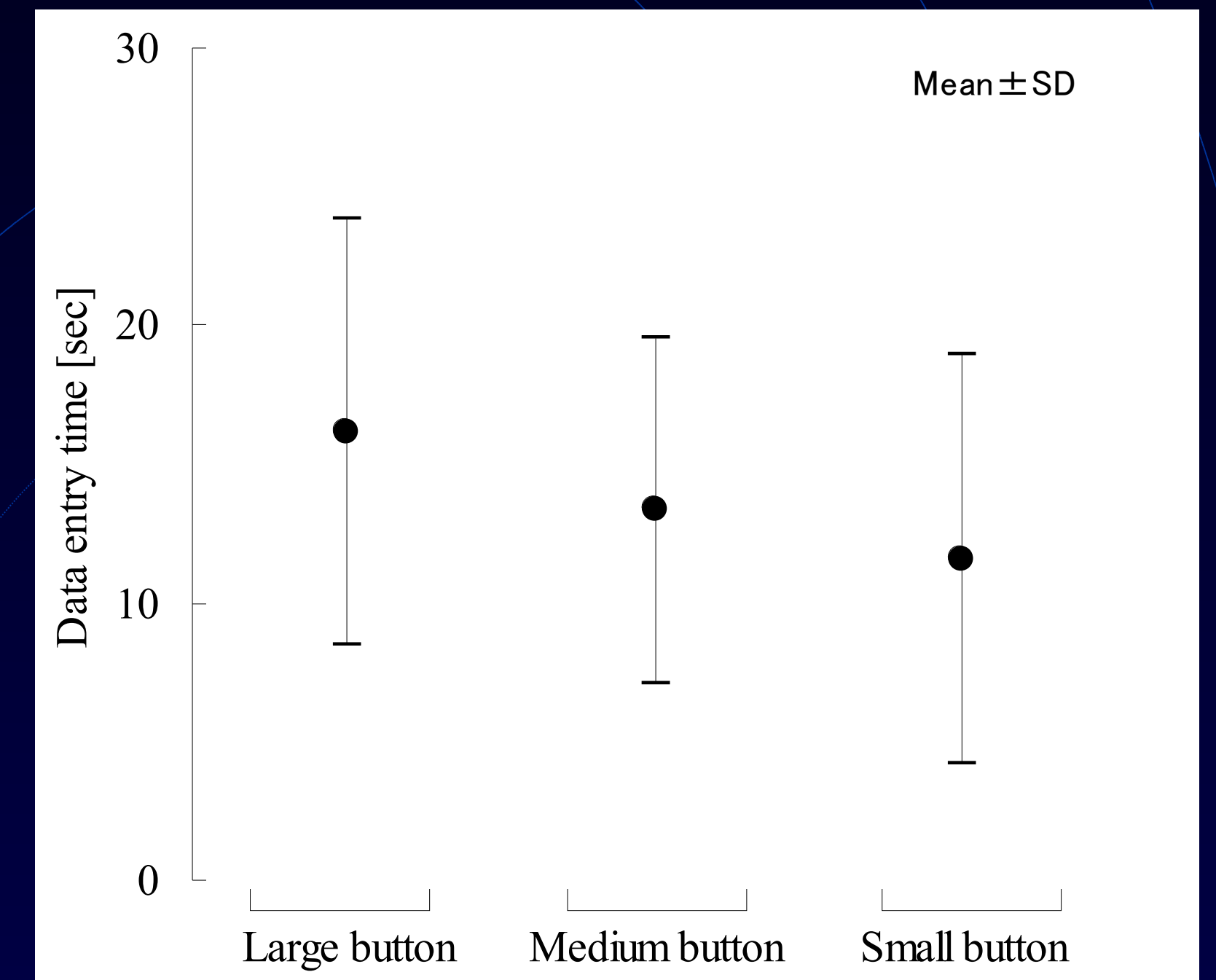
RESULTS

Fig. 4 The mean times of the entry time by three button sizes. The small and medium buttons were almost the same, and the small and medium button sizes were 30% faster than large button.
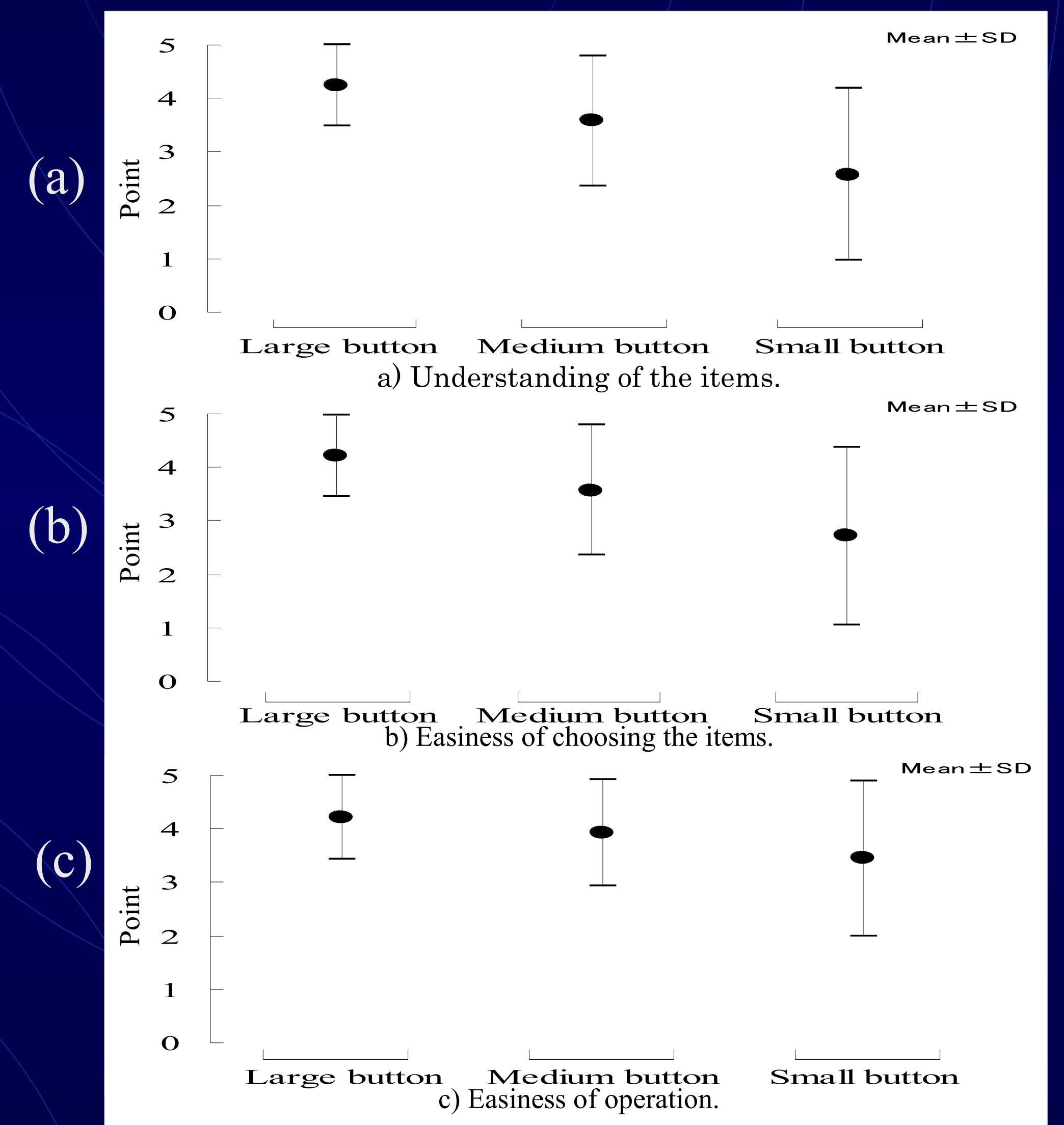

(a) a) Understanding of the items.

(b) b) Easiness of choosing the items.

(c) c) Easiness of operation.

Fig. 5 The questionnaire results about the client operation. Difficult-to-use is evaluated as 0, and Easy-to-use is evaluated as 5. The client understanding of the items displayed on buttons as shown in Figure 5(a) were 4.2±0.8 points for large button, 3.6±1.2 points for medium button and 2.6±1.6 for small button.

Ease of choosing the items results are shown in Figure 5 (b) and were 4.2±0.8 points for large button, 3.6±1.2 points for medium button and 2.7±1.7 for small button. Ease of operation results are shown in Figure 5(c) and were 4.2±0.8 points for large button, 3.9±1.0 points for medium button and 3.5±1.5 for small button.

CONCLUSION

The entry time results indicate that the small and medium button sizes are most suitable for the displayed items. However, the questionnaire results indicate that the large button size is most suitable for the displayed items. The most important point in this system is to be able to use it easily. Thus the request items displayed on the LCD have to be described by large button.

The care-requiring clients can easily operate the system and send their requests to the Home Helper at any time for 24 hours. Therefore, the system enables Home Helpers to save a significant amount of time.

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