

Y-H. WU, V. CRISTIANCHO-LACROIX, E. GABILLET, J. LE MAÎTRE, M. CHETOUANI, C. JOST, B. LE PÉVÉDIC, D. DUHAUT, A. RIGAUD. **Perception of affects from non-facial expressions of the robot Nabaztag.** *Gerontechnology* 2012;11(2):385; doi:10.4017/gt.2012.11.02.180.00 **Purpose** Social robots using language and affective expressions can encourage and improve human-robot interaction. Body movements, postures, orientations, colors, and sounds can be used as either the primary method of expression or to provide affective expression redundancy¹. This study is aimed at investigating how the older people and the young perceive affects from expressions of Nabaztag, a non anthropomorphic robot with only non-facial expressions. **Method** Twenty college students (20-34 years old; 11 men, 9 women) and 23 older people (62-85 years old; 4 men, 19 women) were recruited. Nabaztag was programmed to have 27 expressions (3 colours: green/blue/red*3 ear positions: horizontal/vertical/asymmetric*3 levels of speed of light blinking: rapid/slow/continuous). Subjects were asked to categorize each expression into one of the 8 affects: surprise, enthusiasm, joy, calmness, inactiveness, boredom, sadness, or frustration. **Results & Discussion** Colours influenced perception of some affects for both groups. When the older people and the young perceived Nabaztag as calm, the blue colour was most frequently attributed to this affect ($\chi^2(2,n=100)=8.54, p=0.014$; $\chi^2(2,n=63)=24.67, p<0.01$). For the young only, enthusiasm and joy were mostly associated with green ($\chi^2(2,n=67)=25.91, p<0.01$; $\chi^2(2,n=84)=20.86, p<0.01$) while frustration was highly related to red ($\chi^2(2,n=63)=60.10, p<0.01$). As for light blinking speeds, this variable had no influence on the perception of affects for the older people. For the young, perception of enthusiasm was mostly related to rapid light blinking ($\chi^2(2,n=67)=8.27, p=0.016$), while perception of calmness was associated to slow light blinking, $\chi^2(2,n=63)=6.10, p=0.047$. Finally, ear positions also had an effect on perception of some affects. For the older people as well as for the young, perception of positive affect, such as enthusiasm ($\chi^2(2,n=78)=53.154, p<0.01$; $\chi^2(2,n=67)=18.746, p<0.01$) and joy ($\chi^2(2,n=104)=23.096, p<0.01$; $\chi^2(2,n=84)=12.214, p=0.002$) was the most often attributed to vertical position of both ears. Uniquely for the older people, perception of boredom and surprise was mostly related to asymmetric position of both ears ($\chi^2(2,n=55)=12.036, p=0.002$; $\chi^2(2,n=74)=11.541, p=0.003$), while perception of calmness was mostly associated to the horizontal position of both ears ($\chi^2(2,n=100)=6.14, p=0.046$).

References

1. Bethel CL, Murphy RR. Survey of Non-facial/Non-verbal Affective Expressions for Appearance-Constrained Robots. *IEEE Transactions on Systems, Man, and Cybernetics, Part C: Applications and Reviews* 2008;38(1):83-92; doi:10.1109/TSMCC.2007.905845

Keywords: expressive robotic behaviour, human-robot interaction, affective computing

Affiliation: Broca Hospital, Paris, France; E: yahuei.wu@brc.aphp.fr

Full paper: No