

Chapter Four Results

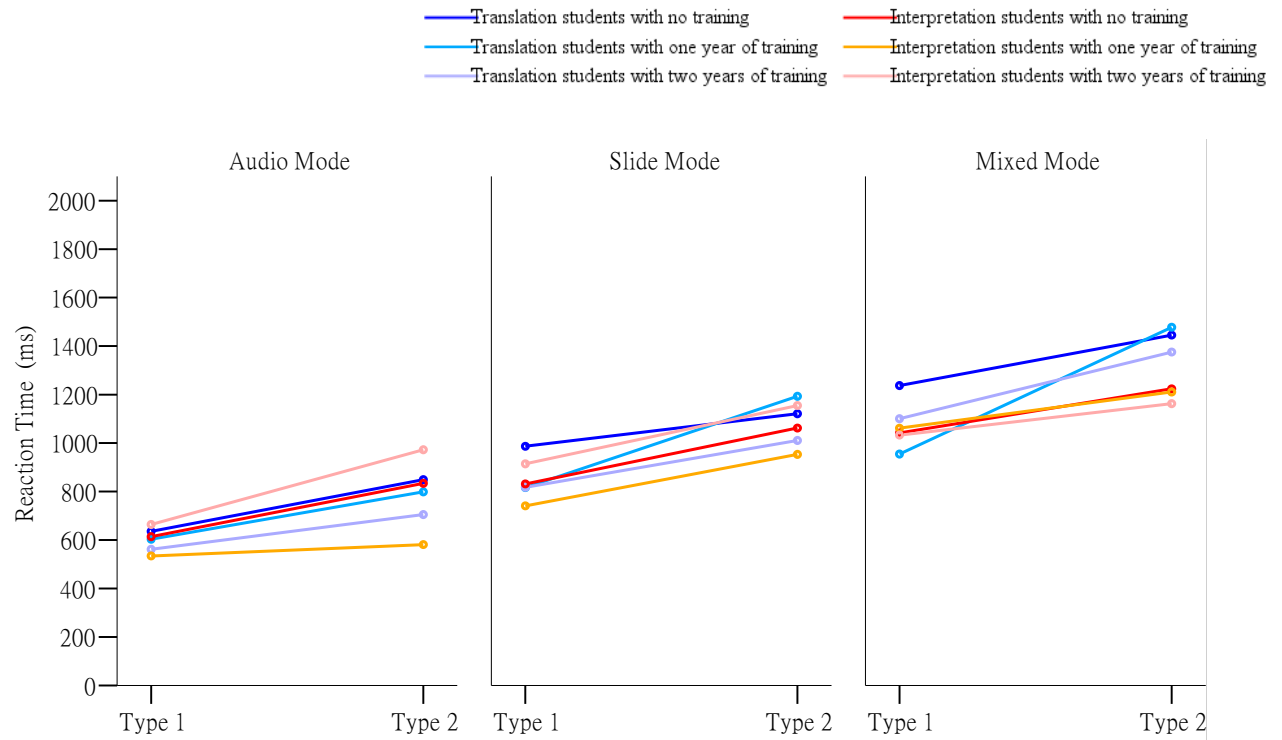
4.1 Set One – Type 1 (e.g. 25) & Type 2 (e.g. 258)

ANOVA results showed significant main effects of Type ($F_{1, 1152} = 107.184, p < 0.01$), Mode ($F_{2, 1152} = 182.336, p < 0.01$), Training ($F_{2, 1152} = 4.980, p < 0.01$), and Program ($F_{1, 1152} = 8.167, p < 0.01$), as well as a significant interaction of Training \times Program ($F_{2, 1152} = 6.948, p < 0.01$).

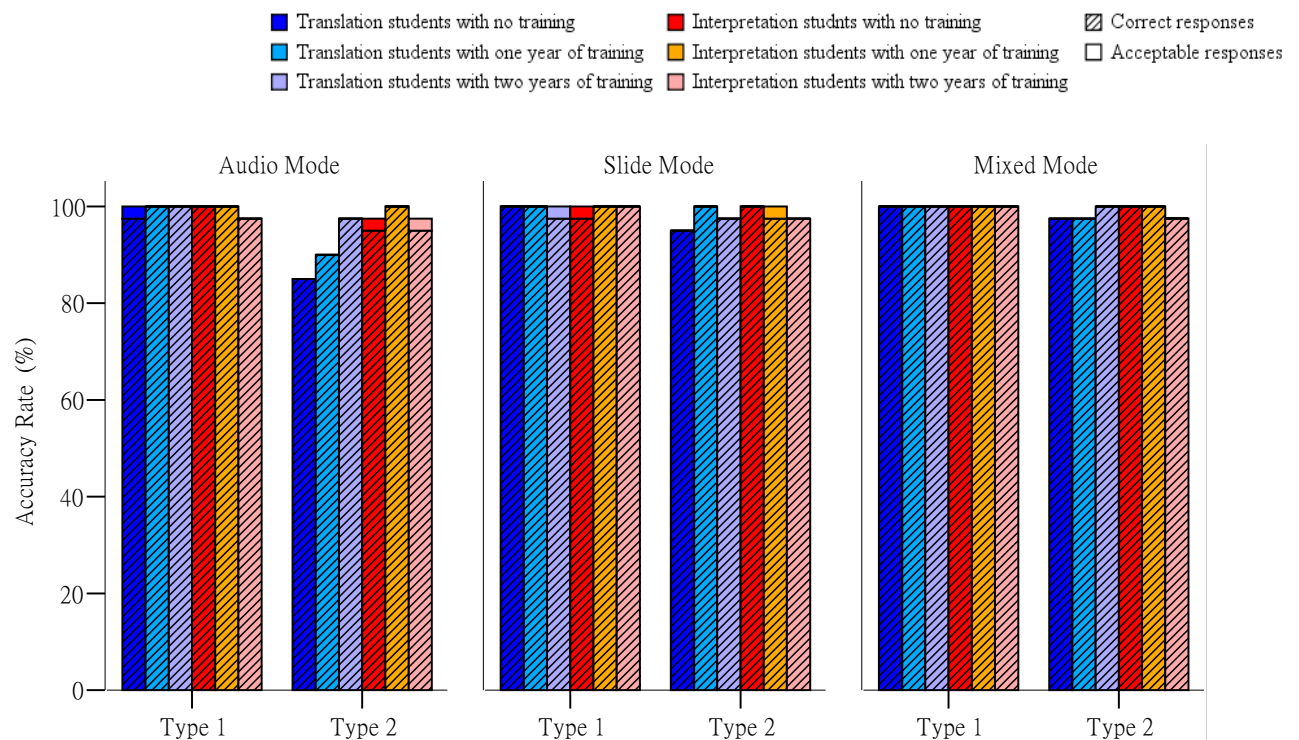
Post-hoc tests revealed that the reaction time of Type 2 (mean = 1062.913 ms) > Type 1 (mean = 841.683 ms), indicating that three-digit numbers without units were more difficult to translate than two-digit numbers without units; also that the reaction time of Audio Mode (mean = 696.213 ms) < Slide Mode (mean = 966.930 ms) < Mixed Mode (mean = 1193.752 ms), indicating that audio input was the easiest for subjects, and that the presence of both audio and visual inputs did not aid in the translation process of these two types of numbers, but instead became a distraction. On the whole, interpretation students with one year of training performed better (mean = 847.135 ms) than the others in terms of reaction time (overall mean = 952.298 ms) (see Fig. 4.1.1).

Accuracy rates remained constantly high for all groups and did not differ much among modes, but translation students with no training scored slightly lower for Type 2 under Audio Mode (acceptable responses = 85.000 %). The accuracy rates for correct and acceptable responses were identical for most conditions in this Set (overall correct responses = 98.125 %; overall acceptable responses = 98.542 %) (see Fig. 4.1.2).

[Fig. 4.1.1] Reaction time of Type 1 (e.g. 25) & Type 2 (e.g. 258)



[Fig. 4.1.2] Accuracy rate of Type 1 (e.g. 25) & Type 2 (e.g. 258)



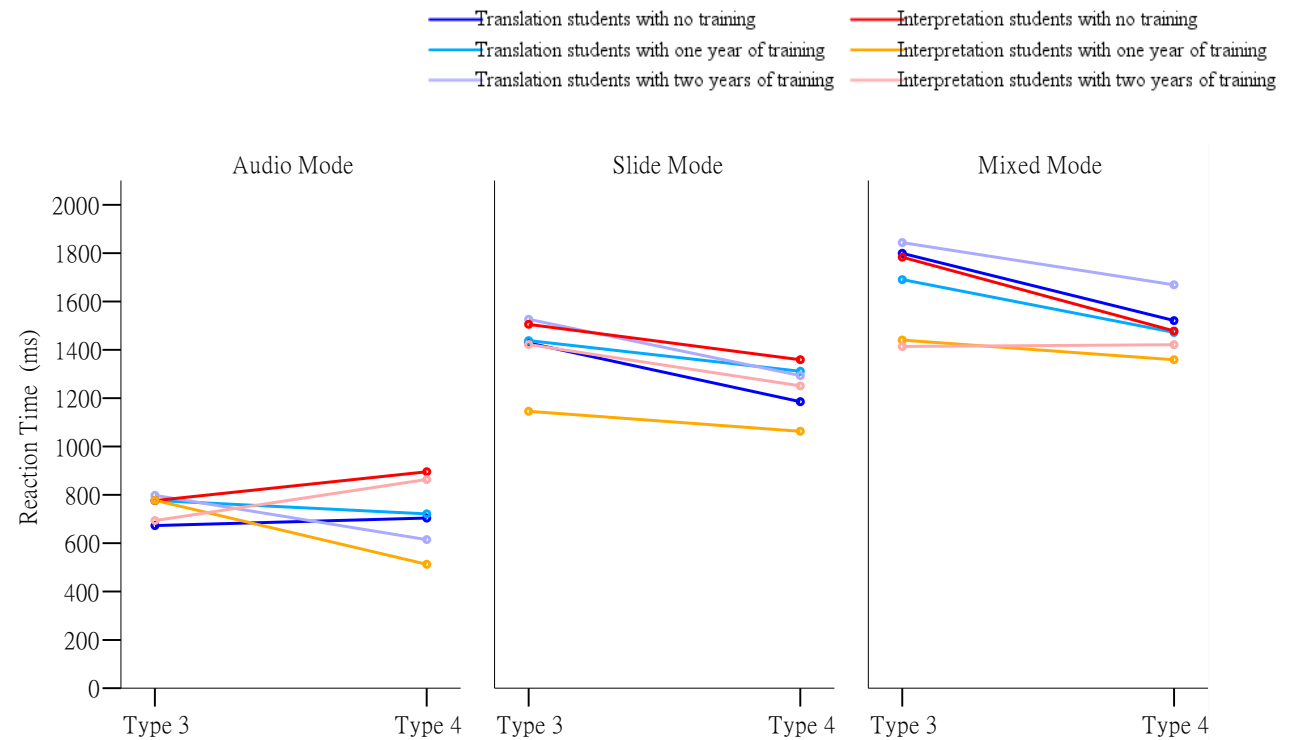
4.2 Set Two – Type 3 (e.g. 2583) & Type 4 (e.g. 2583 年)

ANOVA results showed significant main effects of Type ($F_{1, 928} = 13.483, p < 0.01$) and Mode ($F_{2, 928} = 213.020, p < 0.01$), as well as a significant interaction of Training \times Program ($F_{2, 928} = 5.684, p < 0.01$).

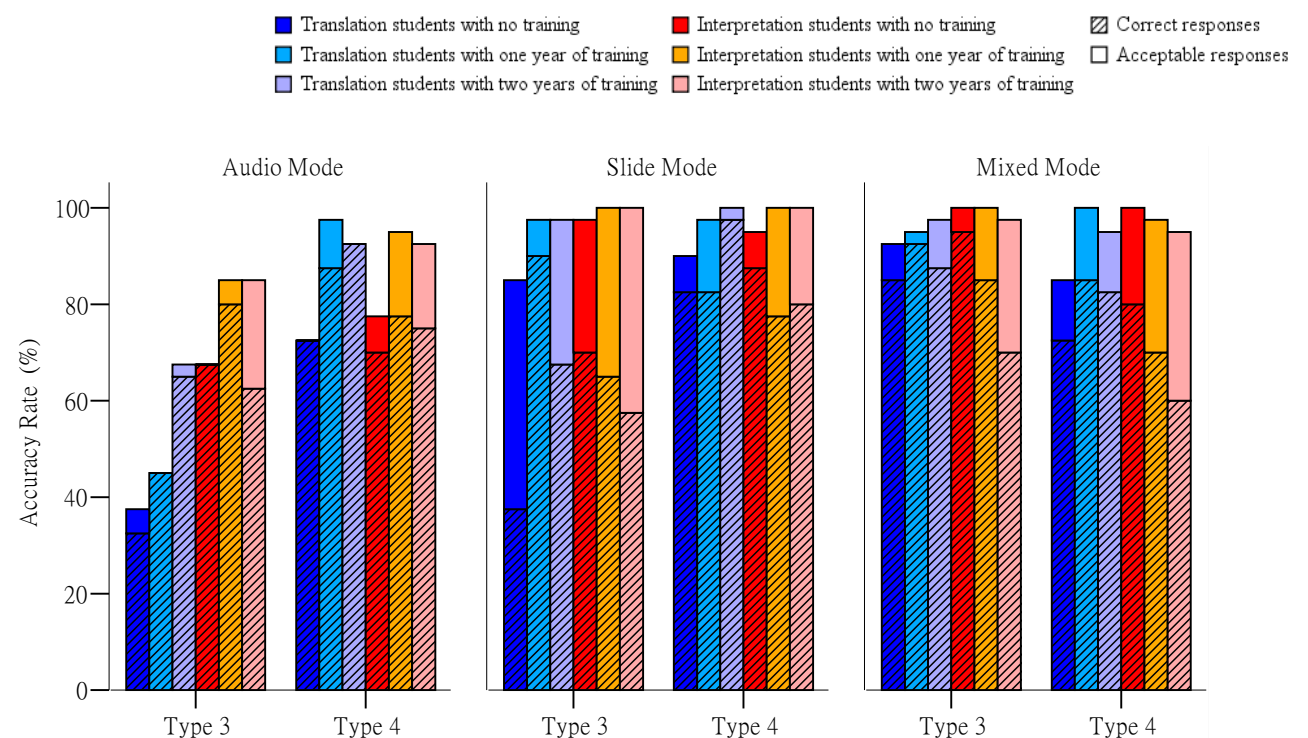
Post-hoc tests revealed that the reaction time of Type 3 (mean = 1273.963 ms) > Type 4 (mean = 1149.742 ms), indicating that four-digit year notations were slightly easier to translate than four-digit numbers; also that, similar to Set One, the reaction time of Audio Mode (mean = 733.975 ms) < Slide Mode (mean = 1327.375 ms) < Mixed Mode (mean = 1574.206 ms), indicating that audio input was the easiest, and that mixed inputs might be a distraction. On the whole, interpretation students with one year of training performed better (mean = 1049.718 ms) than the others in terms of reaction time (overall mean = 1211.852) (see Fig. 4.2.1).

Accuracy rates were high for Slide Mode (acceptable responses = 96.667 %) and Mixed Mode (acceptable responses = 96.250), but there was a noticeable drop in the total accuracy rates of Type 3 Numbers under Audio Mode for translation students (correct responses = 47.500 %; acceptable responses = 50.000 %). Type 3 under Slide Mode had the greatest difference between the rates of Correct and Acceptable Responses (correct responses = 64.583 %; acceptable responses = 96.250 %), which may have been due to the fact that, without the aid of Audio input, subjects tended to mistake four-digit numbers for four-digit year notations (see Fig. 4.2.2).

[Fig. 4.2.1] Reaction time of Type 3 (e.g. 2583) & Type 4 (e.g. 2583 年)



[Fig. 4.2.2] Accuracy rate of Type 3 (e.g. 2583) & Type 4 (e.g. 2583 年)



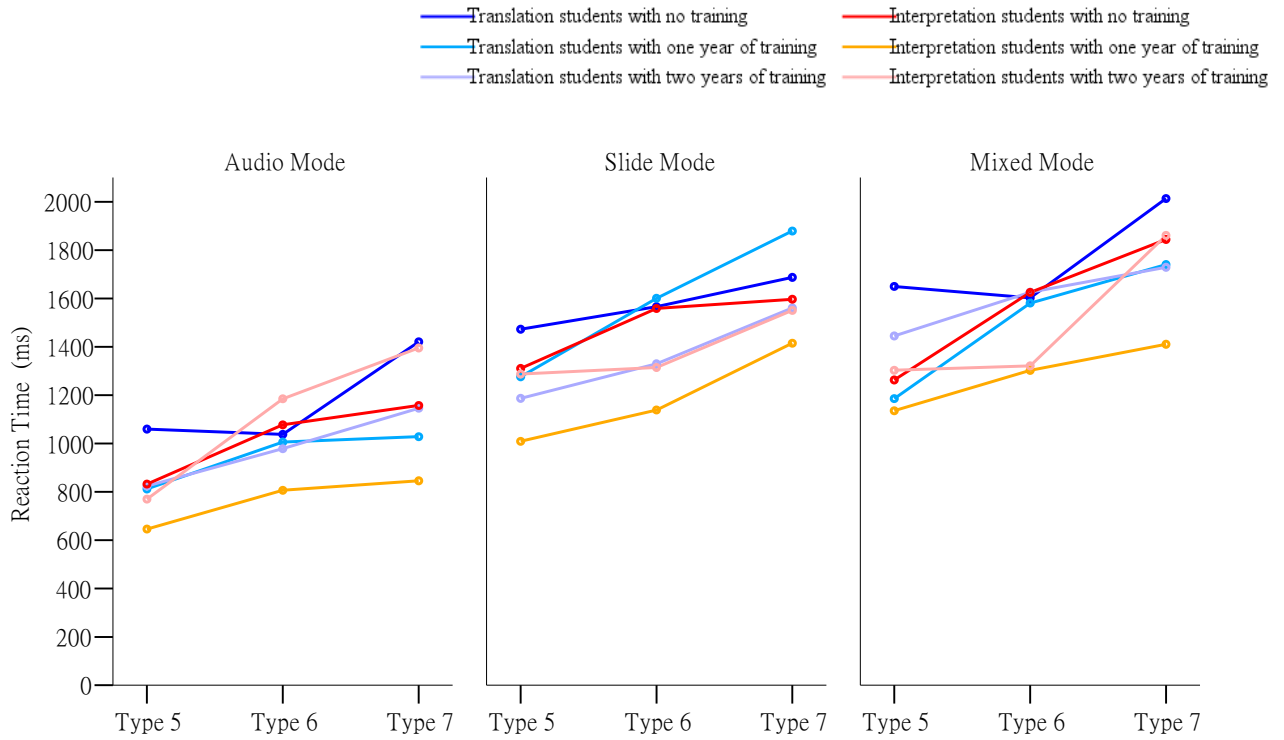
4.3 Set Three – Type 5 (e.g. 2 萬), Type 6 (e.g. 20 萬), & Type 7 (e.g. 25 萬)

ANOVA results showed significant main effects of Type ($F_{3, 1524} = 59.510, p < 0.01$), Mode ($F_{2, 1524} = 134.362, p < 0.01$), Training ($F_{2, 1524} = 21.908, p < 0.01$), and Program ($F_{1, 1524} = 20.858, p < 0.01$), as well as a significant interaction of Training \times Program ($F_{2, 1524} = 8.324, p < 0.01$).

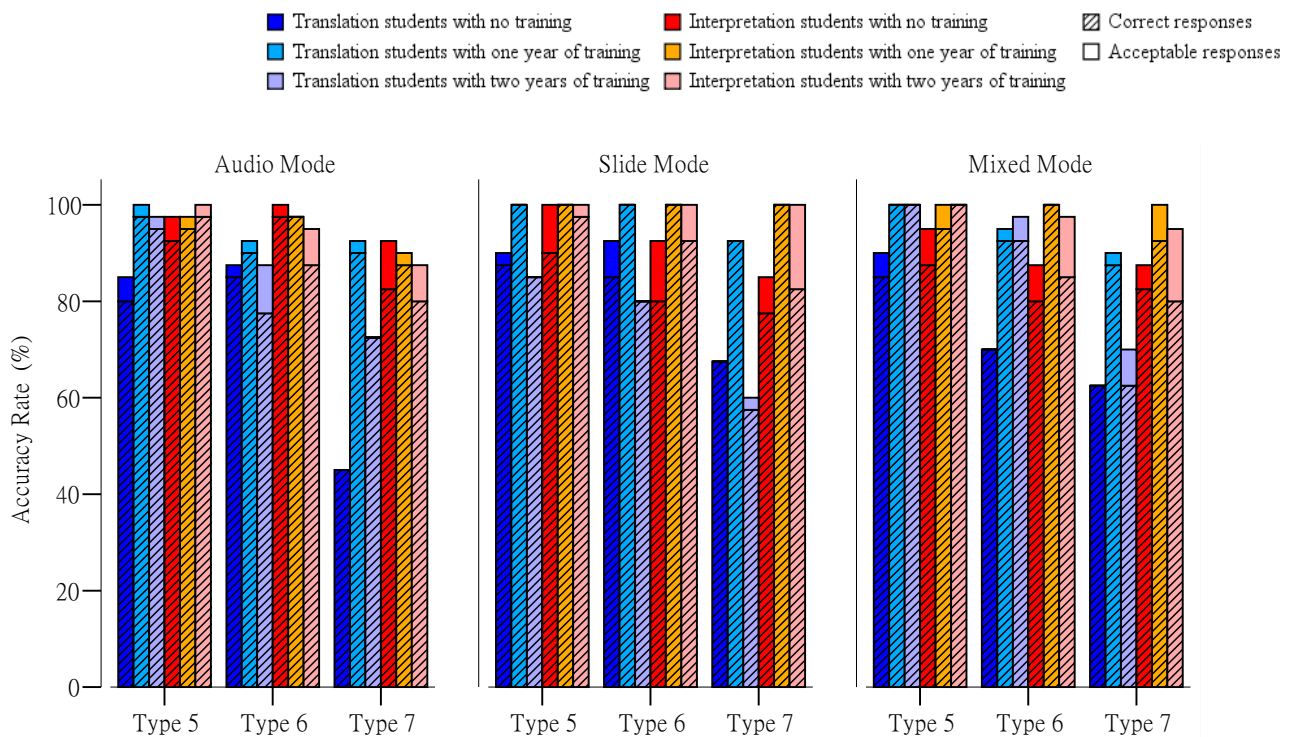
Post-hoc tests revealed that the reaction time of Type 7 (mean = 1515.606 ms) > Type 6 (mean = 1314.277 ms) > Type 5 (mean = 1137.094 ms), indicating that, similar to numbers without units, increasing digit length increased the difficulty of translation; also that the reaction time of Audio Mode (mean = 1001.600 ms) < Slide Mode (mean = 1429.972 ms), with no significant difference between those of Slide Mode and Mixed Mode (mean = 1535.405 ms), which was different from the previous two Sets, and may indicate that as the difficulty of numbers increases, the presence of both audio and visual inputs becomes less of a disturbance to the translation process. On the whole, interpretation students with one year of training performed better (mean = 1078.787 ms) than the others (overall mean = 1322.326 ms) (see Fig. 4.3.1).

Accuracy rates of correct and acceptable responses were similar under most conditions in this Set (correct responses = 86.667 %; acceptable responses = 90.741 %). However, for Type 7, interpretation students (acceptable responses = 93.056 %) performed markedly better than translation students (acceptable responses = 72.500 %). In addition, for correct responses, students with one year of training tended to outperform those with two years of training (94.444 % vs. 80.278 % for translation; 96.389 % vs. 89.167 % for interpretation). Interpretation students with two years of training were able to make up for this loss in accuracy by resorting to giving alternate responses (acceptable responses = 97.222 %), whereas translation students with two years of training were not (acceptable responses = 83.333 %) (see Fig. 4.3.2).

[Fig. 4.3.1] Reaction time of Type 5 (e.g. 2 萬), Type 6 (e.g. 20 萬), & Type 7 (e.g. 25 萬)



[Fig. 4.3.2] Accuracy rate of Type 5 (e.g. 2 萬), Type 6 (e.g. 20 萬), & Type 7 (e.g. 25 萬)



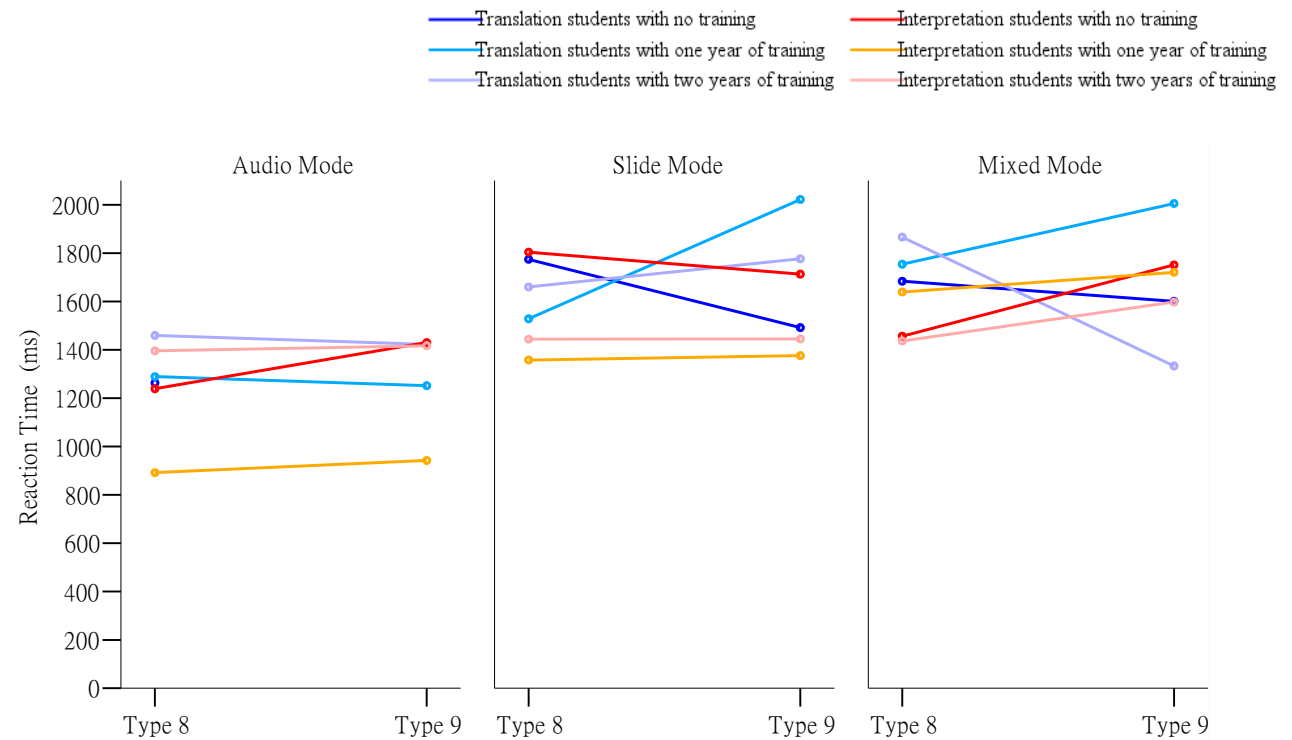
4.4 Set Four – Type 8 (e.g. 250 萬) & Type 9 (e.g. 2.5 億)

ANOVA results showed a significant main effect of Mode ($F_{2,489} = 22.208, p < 0.01$), as well as a significant interaction of Mode \times Training ($F_{2,489} = 9.135, p < 0.01$).

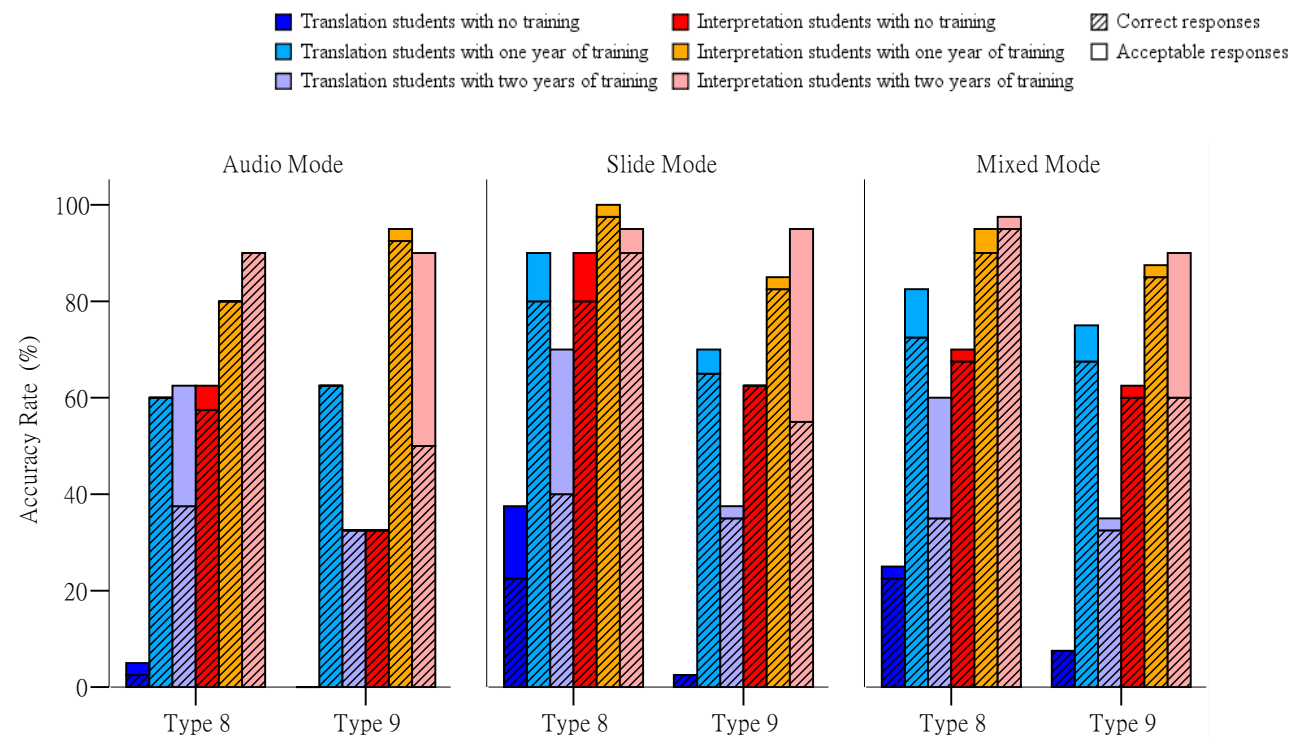
Post-hoc tests revealed that the reaction time of Type 8 (mean = 1476.874 ms) was similar to that of Type 9 (mean = 1525.755 ms); also that the reaction time of Audio Mode (mean = 1258.705 ms) < Slide Mode (mean = 1576.145 ms), with no significant difference between those of Slide Mode and Mixed Mode (mean = 1669.093 ms), indicating that as difficulty increases, the presence of both audio and visual inputs may become less of a disturbance to the translation process. On the whole, students with one year of training had much shorter reaction time under Audio Mode than those with two years of training (mean = 1093.740 vs. 1423.670 ms) (see Fig. 4.4.1).

In terms of accuracy, interpretation students (acceptable responses = 82.222 %) performed better than translation students (acceptable responses = 45.278 %). Translation students with one year of training outperformed those with two years of training (correct responses = 67.917 % vs. 35.417 %) for both number types; while interpretation students with one year of training outperformed those with two years of training (correct responses = 86.667 % vs. 55.000 %) for Type 9 only. However, interpretation students with two years of training were able to make up for this loss by resorting to alternative responses (acceptable responses = 91.667 %). In addition, for translation students, the accuracy rate of Type 9 was lower than that of Type 8 (acceptable responses = 35.833 % vs. 57.722 %), especially for those with no training (acceptable responses = 3.333 %), whose scores were low for Audio Mode as well (acceptable responses = 2.500 %) (see Fig. 4.4.2).

[Fig. 4.4.1] Reaction time of Type 8 (e.g. 250 萬) & Type 9 (e.g. 2.5 億)



[Fig. 4.4.2] Accuracy rate of Type 8 (e.g. 250 萬) & Type 9 (e.g. 2.5 億)

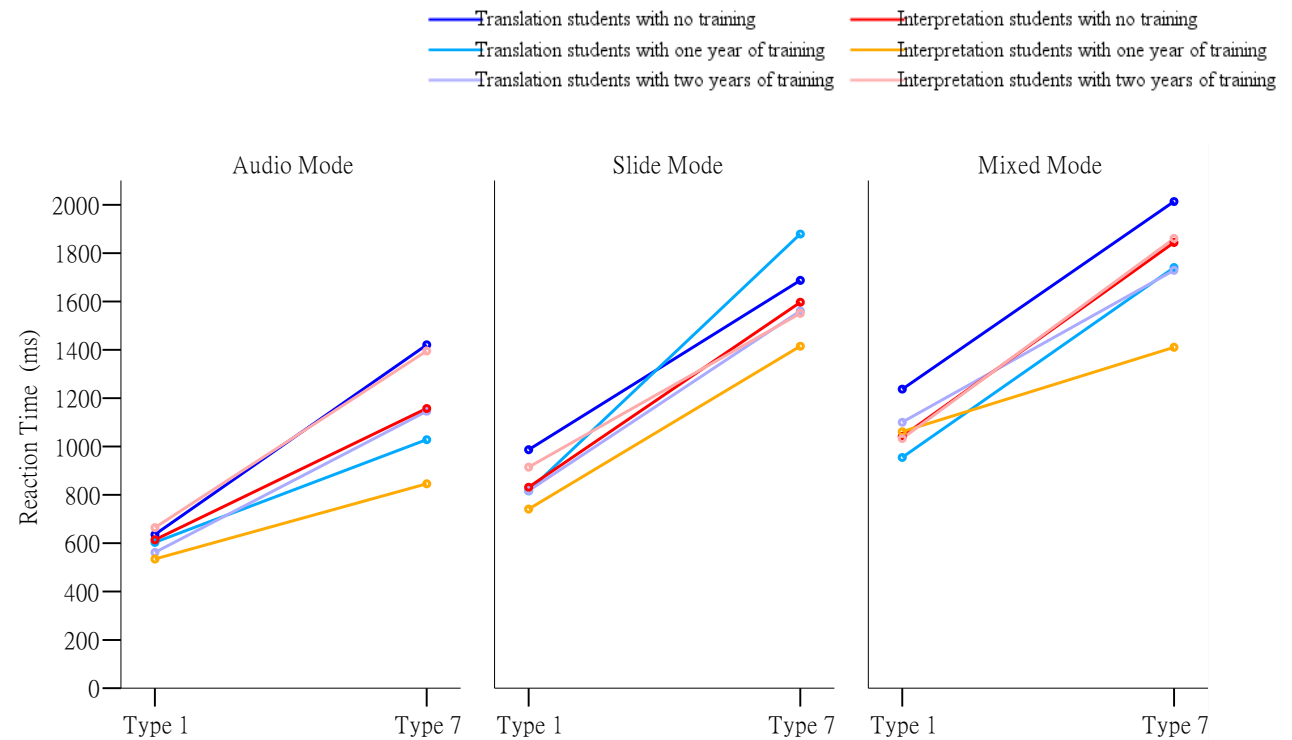


4.5 Set Five – Type 1 (e.g. 25) & Type 7 (e.g. 25 萬)

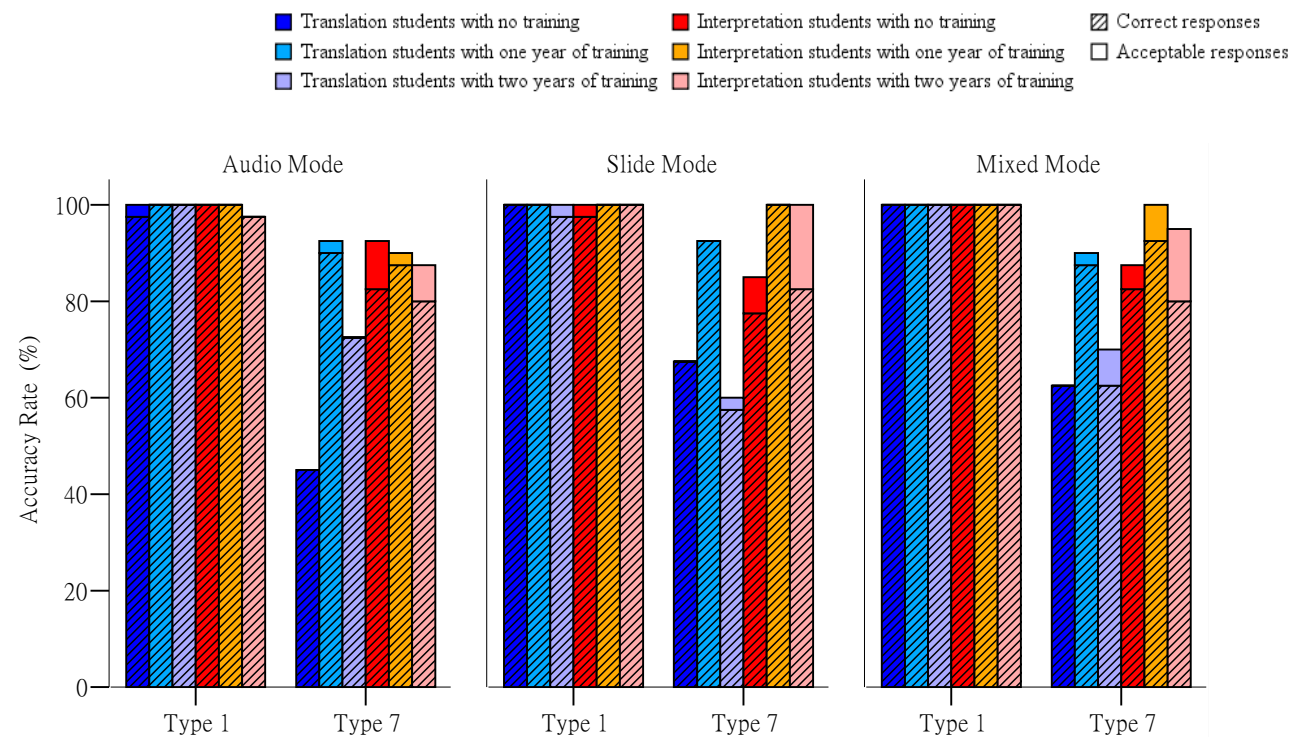
ANOVA results showed significant main effects of Type ($F_{1, 1028} = 502.440, p < 0.01$), Mode ($F_{2, 1028} = 109.191, p < 0.01$), Training ($F_{2, 1028} = 11.813, p < 0.01$), and Program ($F_{1, 1028} = 6.739, p < 0.01$), as well as a significant interaction of Training \times Program ($F_{2, 1028} = 6.818, p < 0.01$). Since the effects of Mode, Training, and Program for both Type 1 and Type 7 have been analyzed in Set One and Set Three, respectively, they will not be repeated in this section.

On the whole, Type 7 was more difficult to translate than Type 1, as is evident by the fact that Type 7 not only had longer reaction time (mean = 1515.606 ms) than Type 1 (mean = 841.683 ms), but also had lower accuracy rates (Type 7 acceptable responses = 82.778 %; Type 1 acceptable responses = 99.861 %). This indicates that the addition of a unit greatly increases the difficulty of number translation (see Fig. 4.5.1 and Fig. 4.5.2).

[Fig. 4.5.1] Reaction time of Type 1 (e.g. 25) & Type 7 (e.g. 25 萬)



[Fig. 4.5.2] Accuracy rate of Type 1 (e.g. 25) & Type 7 (e.g. 25 萬)

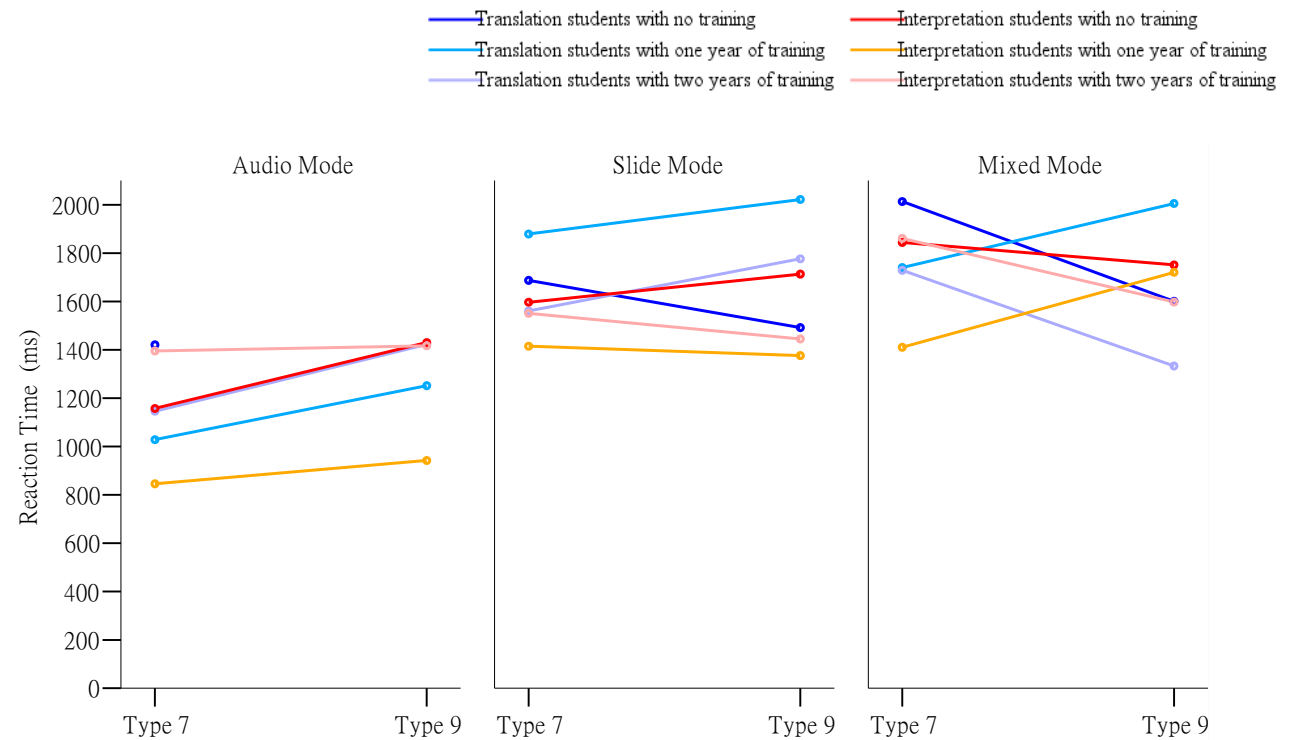


4.6 Set Six – Type 7 (e.g. 25 萬) & Type 9 (e.g. 2.5 億)

ANOVA results showed significant main effects of Mode ($F_{2,543} = 36.166, p < 0.01$) and Program ($F_{1,543} = 9.306, p < 0.01$), as well as significant interactions of Mode \times Training ($F_{2,543} = 7.074, p < 0.01$) and Training \times Program ($F_{1,543} = 16.003, p < 0.01$). Since the effects of Mode, Training, and Program for Type 7 and Type 9 have been analyzed in Set Three and Set Four, respectively, they will not be repeated in this section.

There were no marked differences between the reaction times of Type 7 (mean = 1463.412 ms) and Type 9 (mean = 1525.755 ms). However, the accuracy rate of Type 9 (acceptable responses = 56.806 %) was lower than that of Type 7 (acceptable responses = 82.778 %) as a whole. This may indicate that units which are larger or less common can cause difficulties during number translation (see Fig. 4.6.1 and Fig. 4.6.2).

[Fig. 4.6.1] Reaction time of Type 7 (e.g. 25 萬) & Type 9 (e.g. 2.5 億)



[Fig. 4.6.2] Accuracy rate of Type 7 (e.g. 25 萬) & Type 9 (e.g. 2.5 億)

