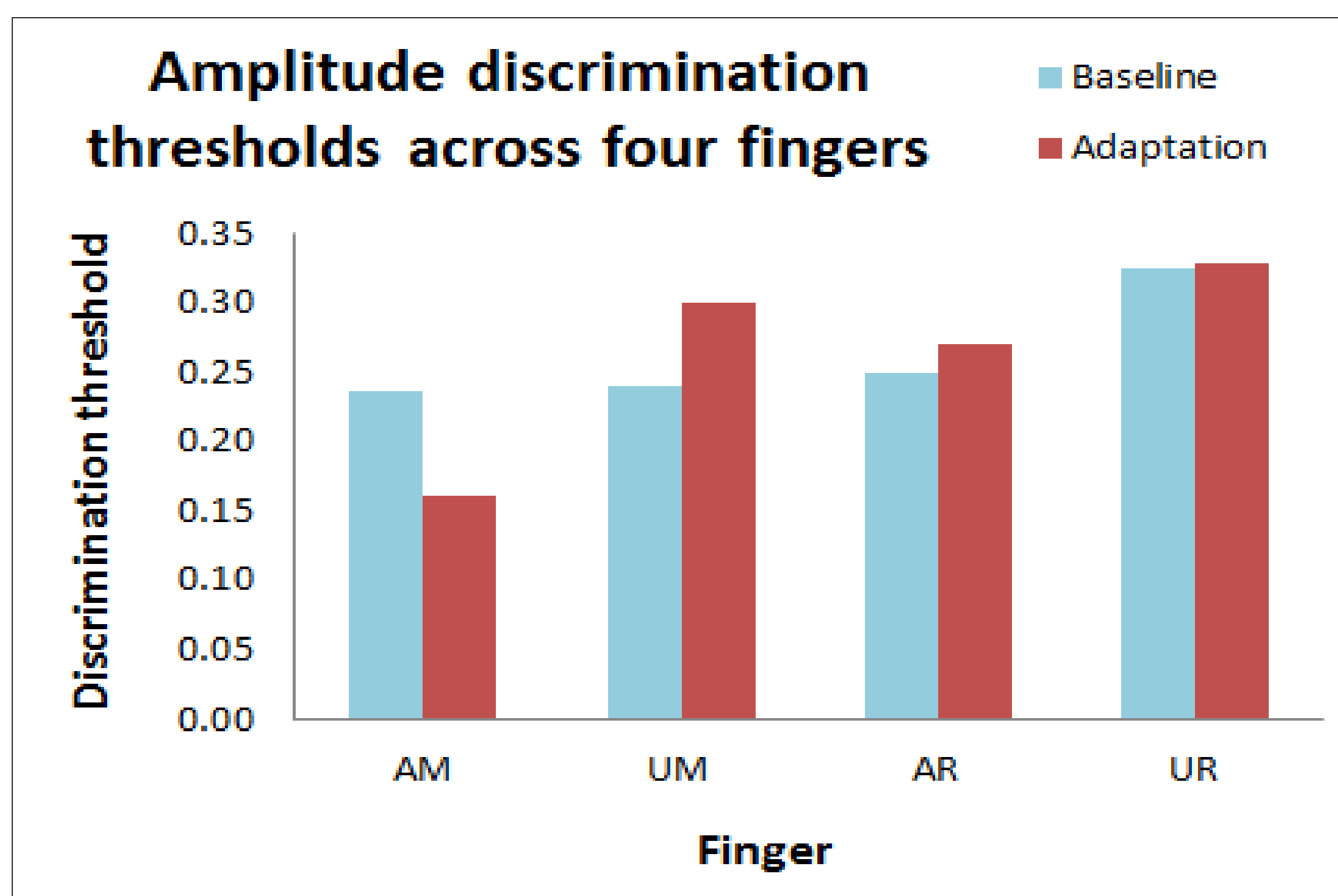


Introduction

- ▣ The mental representations of our fingers are linked, and those of adjacent or opposite fingers can overlap, meaning these fingers may share neural populations to an extent (Tamé et al., 2012).
- ▣ Considering the pattern of overlapping neuronal populations between neighbouring and homologous fingers, will information delivered to one finger spread to other digits in the same pattern?
- ▣ VIBROTACTILE ADAPTATION = exposing a skin site to a vibration. Neuronal activity decreases to this specific stimulus as the skin site adapts.
- ▣ Will fingers other than the one physically exposed to the vibration show signs of adaptation to the stimulus?
- ▣ The (possible) spread of the adaptation was measured by looking at amplitude discrimination across four fingers. Adaptation improves discrimination (Goble & Hollins, 1993), so if other fingers improve, the adaptation has spread.

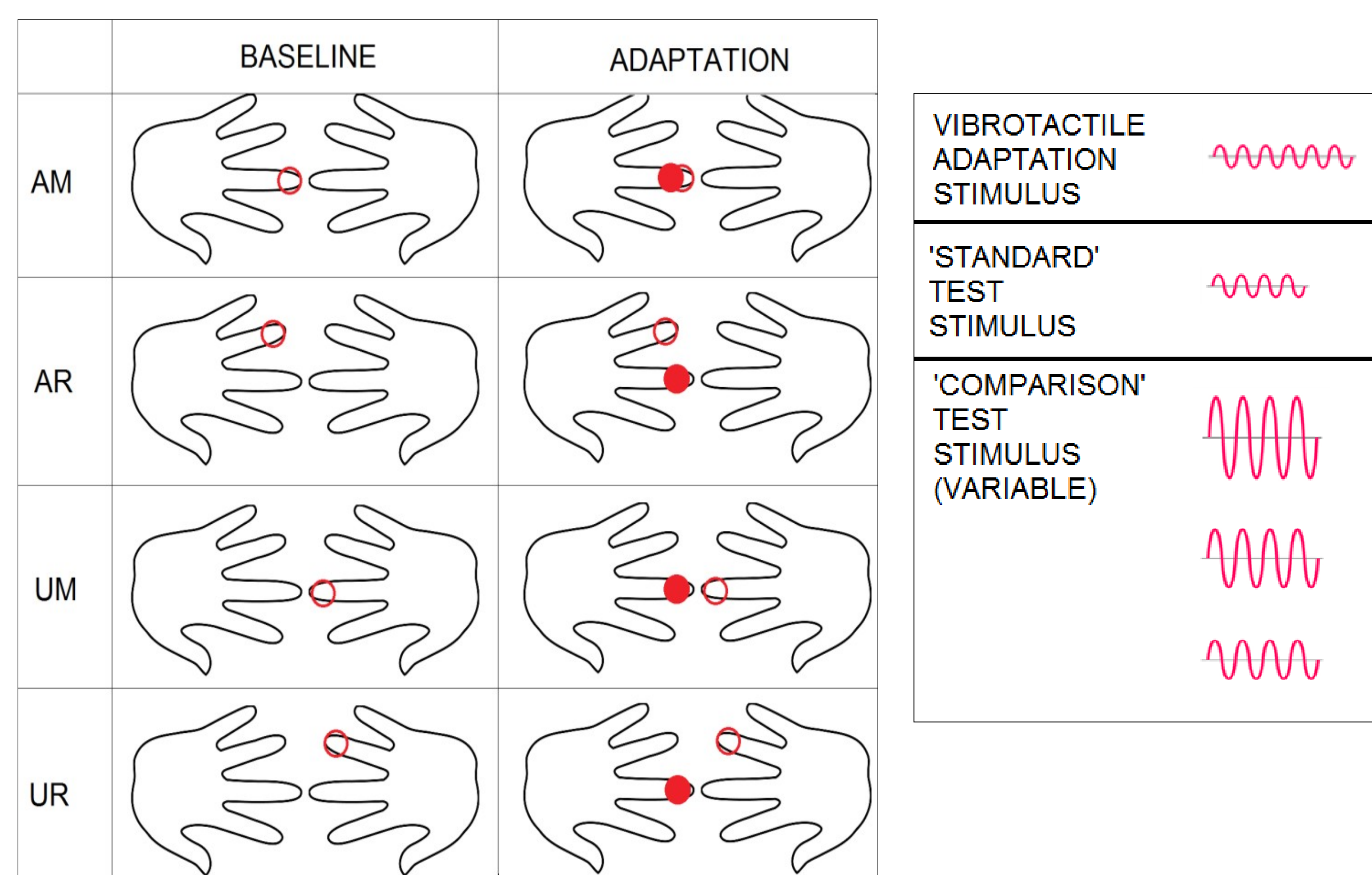
Hypotheses

- ▣ The middle fingers (both the adapted and the opposite) share sufficient neuronal population that both will show adaptation to the stimulus (i.e. show improved amplitude discrimination).
- ▣ The ring fingers do not share sufficient neuronal population with the adapted finger (AM), so would become worse at discrimination after adaptation.



Method

- ▣ Amplitude discrimination was measured in four fingers : the AM, AR, UM and UR. (A/U refers to hand location, adapted/unadapted; M/R refers to finger, middle/ring).
- ▣ Discrimination was assessed by a 2 interval forced choice test: two vibrations were delivered to the ppts finger. They had to identify which stimulus had the higher amplitude.
- ▣ Correct responses caused the amplitude difference between the two stimuli to decrease (increased difficulty). Thresholds = the level at which ppts got 82% responses correct (used QUEST algorithm).
- ▣ In the experimental blocks, the AM was exposed to a 3s vibrotactile adaptation (200Hz) before the amplitude discrimination test.



Results

- ▣ Sig. effect of Hand - overall, the adapted hand showed better amplitude discrimination than the unadapted hand, in both conditions.
- ▣ Sig. effect of Finger - overall, the middle fingers showed better amplitude discrimination than the ring fingers, in both conditions.
- ▣ Sig. interaction between Finger x Hand x Condition; i.e. the AM finger showed significantly improved discrimination, while the AR,UM and UR showed worse discrimination ability after adaptation (n-sig).

Discussion & Conclusion

- ▣ **Did the effects spread? No**, only the physically adapted finger showed improved discrimination. All other finger sites showed impaired discrimination - consistent with previous findings (e.g. Tannan et al., 2007).
- ▣ The significant effects of hand and finger can be explained by the improved performance of the AM.
- ▣ There *may* be a relationship between somatotopic distance and the MAGNITUDE of effect?
- ▣ The UM was almost significantly worse; follow up study in progress. Is there some interhemispheric transfer?
- ▣ **Vibrotactile adaptation does not spread like other tactile stimuli** (Harris, Harris & Diamond, 2001).