

# Abstract for the EMPG 1999 Meeting in Mannheim

## Using Unforced-Choice Tasks in Adaptive Psychophysical Procedures

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Adaptive procedures are in widespread use for measuring absolute and differential thresholds. They can be combined with a variety of tasks, the most common ones being yes-no tasks and forced-choice tasks. Yes-no tasks are often considered to be problematic due to the necessity of the participant to maintain a criterion (where to start to say 'yes') at a stable position. Naive participants are often not able to do so, and there might be a considerable variation between participants concerning the position of this criterion. Forced-choice tasks circumvent this problem by having the participant compare two or more intervals. The adaptive rule is in general different from that of a yes-no task in order to account for chance performance at low signal levels. The latter gives rise to a random walk behavior of the adaptive track at low levels which reduces the reliability of the procedure and thus its efficiency.

The present talk presents a rule that may be combined with unforced-choice tasks. A theoretical analysis of unforced-choice tasks reveals that while the latter involve a criterion (where to start to say "don't know") the situation is nonetheless quite different from that of yes-no tasks. The effects of the criterion and of its possible variations on the value and standard deviation of the threshold estimate are shown to be of no importance as compared to the gain obtained by reducing the random walk behavior for low signal levels. The resulting procedure proves to be more efficient than yes-no and forced-choice procedures. This is shown with computer simulations as well as with empirical data. Moreover, participants report the new procedure to be much more comfortable. In summary, using unforced-choice tasks in adaptive procedures is preferable over using yes-no tasks or forced-choice tasks as it is slightly more efficient and much more comfortable. It might prove of special benefit in clinical settings where the participants are naive and one is in want of a comfortable, yet precise procedure.