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WICKELGREN'S NEGLECT

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I completely agree with Kantowitz that the choices of particular dependent and independent variables are important theoretical decisions. As Kantowitz admits, I did not discuss this matter. Failure to discuss the choice of particular accuracy and time measures does not imply (tacitly, naively, or any other way) that I think "any old measures of speed and accuracy" are equally good.

Wickelgren also neglected some other important topics concerning SAT methodology: (a) dual-response methods, (b) cognitive process spectrograms, (c) continuous-response methods, (d) incremental strength scaling, and (e) neutral control conditions. (a) In the response-signal method it helps induce subjects to respond quickly at all lags to have them press *both* 'yes' and 'no' keys trying to press the correct key first. Reed (in preparation) showed that the RT difference between 'yes' and 'no' key presses provides an instantaneous measure of confidence (strength), which yields d' values that increase monotonically with processing time. (b) Reed (in preparation) also developed a spectrographic method of analyzing such data that can permit one to decide whether the growth in accuracy with increasing time is due to a continuous accrual of strength or an all-or-none process with large variation in finishing times. (c) Dosher (personal communication) suggested that the ideal SAT method would have a subject continuously responding in a manner which tracked the internal state of information processing in the mind, such as by continuously moving a lever in either 'yes' or 'no' directions dependent upon his internal state. Initial efforts were not successful, but the payoff for getting some version of the method to work is so great (making SAT experiments as easy as RT experiments) that we must persist. Preliminary indications are that one can get multiple responses from a subject on each trial, every half second, which yield SAT functions identical to the single-response signal method. We wish to explore having subjects make a standard continuous movement (e.g., move a lever away from the body) as a sort of carrier signal on which the choice response could be a modulation (e.g., acceleration-deceleration or veering to the left or right). (d) Estimating the accuracy asymptote of SAT functions poses a problem under conditions where a subject makes no mistakes with unlimited processing time (e.g., in classifying a dog as an animal). It does not help to use probability-correct as one's accuracy variable, since it is clear that all Pr = 1 scores do not represent the same underlying strength of association. Two plausible solutions have been developed: add noise or otherwise reduce perceptibility to reduce asymptotic performance below 100% or use strength (confidence) ratings that don't run into a measurement ceiling. With the latter it is often necessary to use a method similar to that of Creelman (1967),

namely, incremental d' scaling (an adaptation of the old idea of integrating *jnds*). SAT functions lend themselves especially well to this. Scale the $(i + 1)$st hit condition against the ith hit condition, continually adjusting the incremental d' measures to be in the σ-unit of the pooled conditions below the SAT intercept (where the d' between hit and false alarm conditions is zero). Do the same for the false alarm conditions, then subtract the cumulative false alarm SAT from the cumulative hit SAT to obtain an SAT function independent of changes in yes-no response bias over response time. Because this incremental scaling method measures accuracy at every time using the same σ-unit – namely, the noise in the pooled (below-intercept) condition, it is the method of choice, even in cases where asymptotic d's are finite using direct hit *vs* false alarm scaling (where the σ-unit may be changing with response time). (e) To assess possible negation or contradiction (inhibitory?) processing in the false alarm condition, which may have rather different dynamics from verification processing in the hit condition, one can scale each against a neutral control condition. The control condition might be nothing more than a blank screen. Subjects are instructed to guess. A variety of other control conditions may be employed, since probably no condition is strictly neutral in the sense of merely controlling for stimulus-independent changes in yes-no response bias with time.

There you have another potful of Wickelgren's neglects. Does Wickelgren regret his neglect or neglect his regret?

References

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