## The  Subject's behavior in Experimental Situation During Measurement of  Confidence & Decision making

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### Subjects

Thirty officers from Everest Group of Industries – NCR Delhi were considered: 20 males, average age 21.8 years and 10 females, average age 19.5 years.

### Procedure

The Aiming Task was the only piece of apparatus used this experiment. The illuminated target area consisted of numbered divisions running from a central 10 to 1 at both ends. (That is, reading from left to right, the divisions were 1,2, 3, ..... 9, 10, 9 ..... 3, 2, 1). Advantage was taken of the fact that each scoring division could be switched on or off independently to vary the length of target visible to S. More precisely, by switching off symmetrical pairs of scoring divisions from each end, the visible target area could be reduced from 1 — 1, (the longest target) to 2 — 2, 3 — 3 ............. to 10 alone (where only the central 10 was illuminated). The way in which these different target sizes were used is described below. As Featherstone' s results showed no significant differences between the three possible speeds of the trolley, only one speed — the fastest — was used. The same consideration made the additional use of the Rotter Board appear unnecessary.

Each S aimed at five different target sizes during the experiment. The thirty Ss were allocated randomly to three groups: Group I comprised five males and five females aiming at target sizes 1, 3, 5, 7, 9 (i.e. sizes 1 — 1, 3 — 3, etc.); Group II comprised five males and five females aiming at target sizes 2, 4., 6, 8, 10; Group III comprised 10 males, five aiming at targets 2., 3, 5, 7, 9 and five at targets 2, 4.., 6, 8, 2.0. Each S performed on his five targets in a different order with the exception of the ten Group III males whose target order duplicated that of the ten females. This design allowed comparison of Ss performing on targets 1., 3, 5, 7, 9 with those on 2, 4. 6, 8, 10; it also allowed comparison of males with females.

The procedure was identical for each S:

(a) S was asked to sit on a chair in front of the target. The task was explained to him until he thoroughly understood what to do; he was told it was a test of aiming ability and that be must try to score as highly as possible.

(b) S was allowed to practice on each of his five target sizes. Precise knowledge of results was given and he was told to take as many practice shots as he needed to enable him to assess his ability.

(c) After practice on each target be was asked to estimate what score he could make on average out of ten (regardless of whether his shots were on or off the illuminated section of the target). Thus five measures of estimated ability were obtained.

(d) S was then shown each target in the order 2, 7, 4., 10, 5, 8, 1, 6, 9, 3, and in each case he was asked if he had ten shots at that target, how many he could land on the illuminated area.

(e) s had ten shots at each of the five targets he had practiced on and in the same order. He was told after each shot merely whether he had hit or missed the target.

(f) Finally, S was given ten further shots. In this part of the test be could choose his n target size but was scored' as follows. A 'hit' (i.e. landing a shot in the illuminated area) scored the lowest number showing on the target, while a 'miss' (a shot which landed off the illuminated area) scored zero. Thus, for instance, if S chose a fairly easy target, say 4. — 4., he scored 14. points for each hit. If he chose a smaller, more difficult target, say 8 — 8, he scored 8 points for each hit but, of course, was more likely

to miss and score nothing. In this part of the test S was again told 'hit' or 'miss' and could change his target size up or down after each shot. It will be noted from (b) above that in this situation, practice shots did not 'cost' S any points. This was later felt to be a mistake, partly due to the fact that Featherstone's draft report was not available until after the Pilot Studies had been carried out. Three types of index, speculatively giving measures of confidence or riskiness, were calculated from the data. These were: firstly, the number of practice shots taken (No. Prac.); secondly, three measures of the discrepancy between S's estimated and actual ability (D—score); thirdly, the mean tendency of S to overshoot or undershoot the central 10 Co/u shoot). The first index was based on the same reasoning as in Featherstone's experiment. Three D—scores were calculated: one where S gave a direct verbal estimate of his ability (Verbal D-score) and which was thus rather obvious to him as a measure of confidence; the second was the mean difference between S's subjective and objective probabilities of success of hitting ten target sizes — this was termed the Probability D—score and is fully explained below; the third was a measure of S's confidence when he had. to act as opposed to merely state his estimate — this index was termed the Action D—score and is again explained below. The third type of index — S's mean tendency to overshoot or undershoot was purely exploratory and was based on the observation that most Ss showed a very constant tendency to overshoot or undershoot. It was further felt

that this index (if it proved valid) would be a particularly useful one, as it was not at all obvious to S as a measure. Specifically, the indices were calculated as follows:

1. No. Prac. — the total number of practice shots taken.

2. Verbal D-score - the difference between the mean of five estimates (score out of ten) obtained in (c) above and mean actual ability (taken as the mean of the last 10 practice shots at each target).

3. Probability D—score — From the last 10 practice shots on each target (i.e. 50 shots) an 'objective probability of success could be calculated for S at each target size (i.e. on the basis of these 50 shots the likelihood of S landing a hit on each target size from 1 — 1 ........ 10 could be calculated). From (d) above, a 'subjective probability of success' for each target size was obtained. The Probability D—score is the mean discrepancy (over all ten targets) of the subjective and objective probabilities. It is, thus, a further measure of the relationship between S's estimated and actual abilities.

4. Action D—score — In procedure (f) above S had to actively choose a target size and then shoot at it, as opposed to merely estimating his ability verbally. This index is the discrepancy between the mean target size chosen and S' a mean actual score.

5. O/U shoot — From the fifty shots taken in (e) above, 8' a mean tendency to overshoot or undershoot was calculated. Half the shots were from the right and. half from the left, thus any bias caused by the placing of the target or movement of S's position was cancelled out. Overshoots are subsequently referred to as positive and undershoot a as negative.

**Results**

The five indices were calculated for each S. No significant differences were found by t—tests between the scores of men in Groups I, II or III whether performing on targets 1 — 9 or 2 — 10, thus all twenty men were treated as a homogeneous group. The only significant difference between male and female Ss was in the actual score — women scored significantly lower. They also tended to take more practice, although this result was not statistically significant. Men's results were treated separately, however. The mean values of the indices obtained were as follows:

| | No. of Practice | Verbal 1 D Score | Prob. D Score | Action D Score | o/u Shoot |
|---|---|---|---|---|---|
| Male | 103 | 0.0 | -0.6 | -0.7 | -0.3 |

| Female | 134 | +0.2 | -0.7 | -0.7 | +1.3 |
|--------|-----|------|------|------|------|

The indices were Interco related within the male and. female groups. Product—moment correlations (Pearson' a r) were calculated for the male group. As there were only 10 sets of female scores, rank—difference correlations were calculated to provide a rough comparison with the male group. The inter correlation matrices are given in Tables I and II below

**Table I**

**Product—moment correlations between confidence indices for the male group**

|  | N. of Practice | Verbal D Score | Prob. D Score | Action D Score | o/u Shoot |
|--|----------------|----------------|---------------|----------------|-----------|
| N. of practice | - | -0.01 | -0.38 | -0.05 | +0.20 |
| Verbal D Score |  | _ | +0.22 | +0.16 | -0.01 |
| Prob. D Score |  |  | - | +0.44* | +0.17 |
| Action D Score |  |  |  | - | +0.10 |
| o/u shoot |  |  |  |  | - |

where * signifies p < .05

**Table II**

**Rank—difference correlations between confidence indices for the female group**

|  | N. of Practice | Verbal D Score | Prob. D Score | Action D Score | o/u Shoot |
|--|----------------|----------------|---------------|----------------|-----------|
| N. of practice | - | -0.23 | -0.29 | +0.59 | -0.03 |
| Verbal D Score |  | _ | +0.65 | -0.13 | +0.37 |
| Prob. D Score |  |  | - | -0.17 | +0.15 |
| Action D Score |  |  |  | - | +025 |
| o/u shoot |  |  |  |  | - |

where * signifies p < 05

**Discussion**

These results are markedly different from Featherstone' s both as regards the raw score values and the values of inter correlations. The mean values of the two major indices for the two experiments are shown below:

|  | Total N. of Practice | Verbal F1 Score |
|--|----------------------|-----------------|
| Featherstone Experiment | 37 | +13 |
| First Pilot Study | 103 | 0.00 |

These values are for young males in both cases and D-score are discrepancies per shot (thus discrepancies in 10 points, not .o). The very high number of practice shots taken by Se in this experiment

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(one subject was not satisfied until he had taken 337 practice shots) was almost certainly due to the fact that practice shots were unconstrained by 'cost'. When a measure of 'initial ability' was calculated (the mean of 5' s first 10 practice shots), it was found that in the male group No, Prac. correlated with initial ability r = - 0.40. Thus, there is a substantial relationship between poor ability and amount of practice — this suggests that the No. Prac. index is reflecting ability in this situation and. is not a measure of riskiness. Another factor which may be important is the different type of subjects used in the Pilot Study. Student Se would be more likely to interpret the situation as a test of sane aspect of personality and would thus plausibly exhibit more cautious behavior. This factor may have contributed to the large number of practice shots taken and also to the greater realism in Se' estimates.

The values of the inter correlations for both male and female groups are strikingly low. On the basis of Featherstone's results, negative correlations would be expected between No. Prac. and P—scores — the obtained coefficients are in fact negative in five cases out of six but none approached significance. This lack of correlation may again be attributable to the fact that practice shots did. not cost any points. It might also be expected that the three D—scores would show positive inter correlations if S was consistent in estimating his ability. In fact, four of the six correlations are positive, two significantly so. 'Action D—score' in the female group is the measure whose relationships with No. Prac. and the other 1)—scores are contrary to the predicted direction in all three anomalous cases. When the two correlation matrices are examined, it is seen that Probability D—score is most consistently related to No. Prac. (r = —0.38 for males and. rho = —0.29 for females). In the male group the Probability 1)-score is most closely related to the Action 1)—score (r = +0.44.), while in the female group it is most closely related to the Verbal 1)—score, (rho +0.65).

The correlations of o/u shoot with the other indices are small and inconsistent in all cases.

Thus, results from the First Pilot Study were inconsistent with Featherstone's results. In retrospect these inconsistencies may be partly attributed to changes in the experimental situation (especially the lack of 'cost' for practice shots ) and differences in the sample tested. At the time when these studies were carried out these possibilities were not fully obvious. A Second Pilot Study Was carried out with some modifications in an attempt to resolve the differences between the first study and Featherstone' s Experiment.

**References**

AMMONS, R.B. (2006 ). Effects of knowledge of performance: a survey and tentative theoretical formulation. J, Gen. Psycho., P 279—299

ATKINSON, J.W. (2007). Motivational determinants of risk—taking behavior. Psycho. Rev., , 359—372.

BAKER, C.H. (2007) The objective study of judgment and decision taking. Psycho., , 225—233

BAYTON, JA. and WHYTE, E. C. (2010). Personality Dynamics during success-failure sequences. Soc. Psycho., , 583—591

BECKER S W. AND  SIEGEL, S. (2008). Utility of grades: level of aspiration in a decision theory context. J. cp Psycho

DAVID E BOSSERT  ( 2010 ) A quantitative theory of decision. Psychol. Rev, , 595—621.

EMILLY W GRUEN :  Personality differences and level of aspiration ( 2008 ) P 111—150

FEATERSTONE, S.  (2009): Confidence and caution in an achievement situation. Unpublished note.

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