

Coin Rotation Task

The Development of Norms for the use in New Zealand and United States

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Merits of the Coin Rotation Task

- ✓ Validated against FTT, GST, GPT
- ✓ Available, inexpensive, & easily replaceable
- ✓ Light – especially compared to other motor tasks
- ✓ Doesn't lose calibration
- ✓ Free from education effects

Why is it not used more often?

- ❑ Limited norms exist for the use of the task.

The Equivalence Study

New Zealand 20 Cent Coin



United States Nickel



Condition A

NZ 20 Cent

US Nickel

Condition B

US Nickel

NZ 20 Cent

“Hold the coin between your thumb and these two fingers in your dominant hand and rotate the coin as quickly as possible (demonstrate).

I will time you for 20 seconds and I will count the number of rotations you make.

If you drop the coin, pick it up as quickly as possible and continue”

Results of the Equivalence Study

- ▶ No significant difference between 20cent Coin and Nickel was found for dominant hand ($p=0.180$) or the non dominant hand ($p=0.916$)
- ▶ The number of coin rotations made over time increased slightly, and a significant practice effect was found in the dominant hand ($p=0.015$)
- ▶ Still had the problem of limited norms....

Collecting norms

- ▶ 215 community dwelling participants
- ▶ 38% males, 62% females
- ▶ Ages 16-87

- ▶ Exclusion criteria: the existence of a motor condition which disabled or impaired fine motor skills, e.g. Carpel tunnel syndrome, arthritis.

Results of Normative Study

- ▶ No gender effect
- ▶ Gradual decline of motor speed with age
- ▶ Main effect of age in the dominant hand, but not in non-dominant hand
- ▶ Number of rotations were significantly greater in dominant than non-dominant hand
- ▶ No difference in motor speed for left handers and right handers

Norms

	Dominant Hand	Non-Dominant Hand	N	P
16-24	29.27 (3.73)	25.82 (4.42)	44	.000
25-32	29.31 (5.80)	26.49 (5.51)	47	.000
33-40	29.08 (5.45)	26.17 (4.62)	23	.002
41-48	28.22 (6.17)	24.48 (4.04)	21	.005
49-56	27.86 (4.91)	26.51 (4.24)	29	.068
57-64	27.09 (3.16)	24.81 (4.08)	22	.079
65+	24.42 (5.71)	23.20 (4.92)	25	.456
All ages	28.15 (5.20)	25.55 (4.74)	215	.000

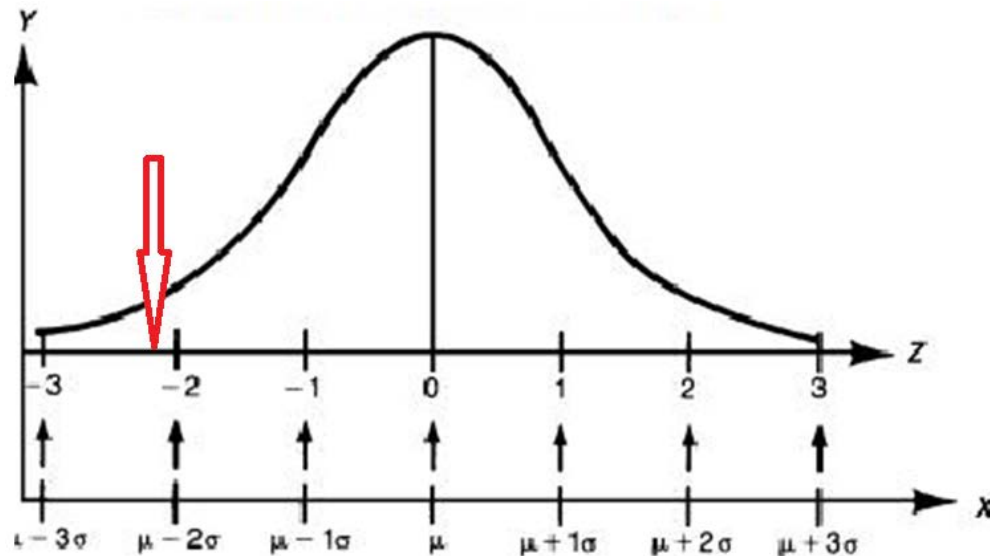
Interpreting an individual's performance

▶ A) comparing against the norm

▶ B) Using Z scores.

For example - A 58 year old male scores 20 rotations in his dominant hand

▶ $(20 - 27.09)/3.16 = -2.215$



Implications of this study

- ▶ Equivalence between 20 cent and US nickel
- ▶ Norms available for use in US
- ▶ Facilitate the use of the task
- ▶ A quick, effective, convenient task of motor speed and motor dexterity.

Future Research

- ▶ Small body of literature exists for the use of the CRT
- ▶ Test re-test timing
- ▶ Larger sample
- ▶ Convergent validity with tasks with greater cognitive component
- ▶ an Equivalence study using the 20 Euro cent!



Any Questions?



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