



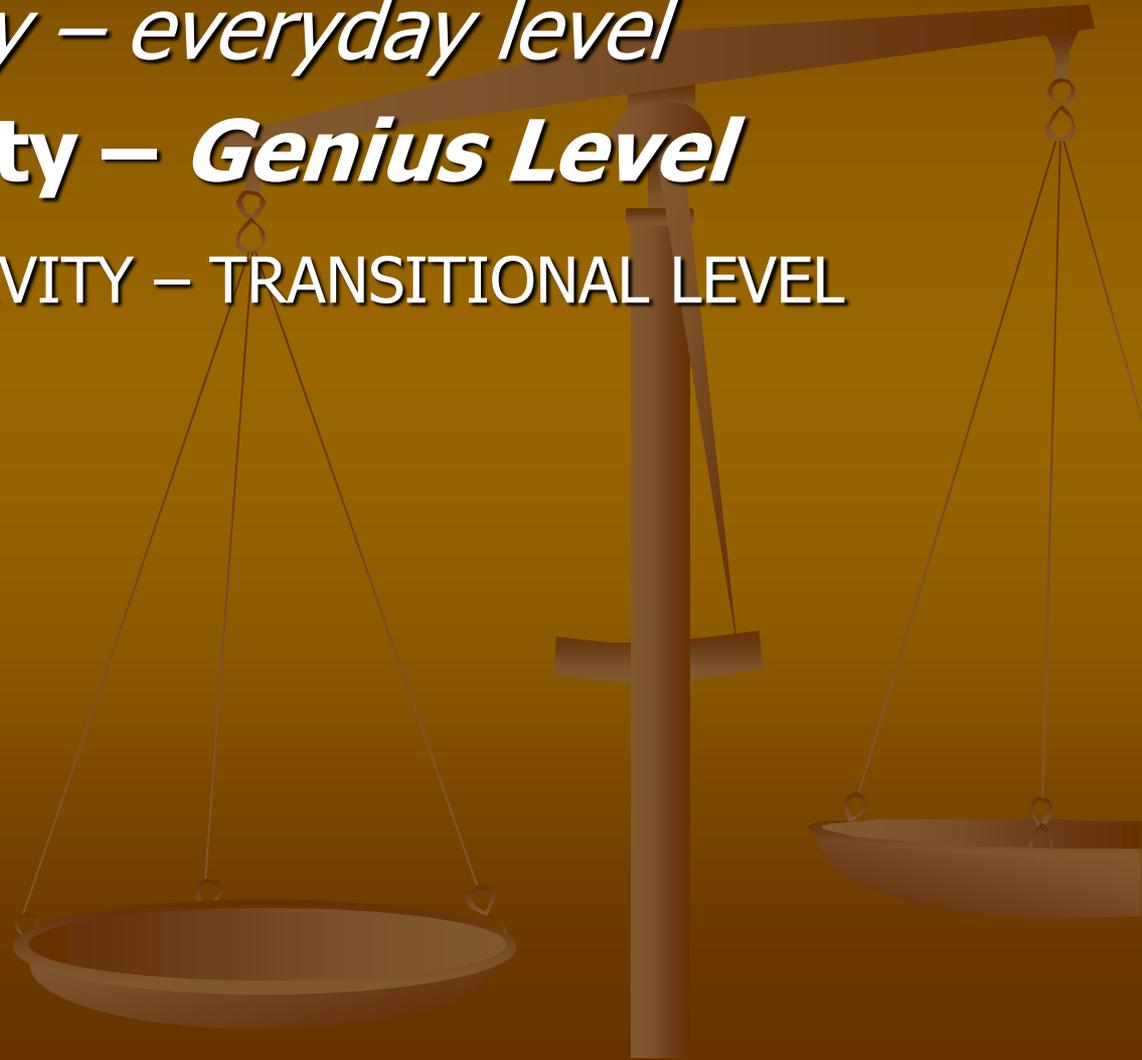
**"We're looking for a creative, innovative individual to head up our new Research and Development Department."**



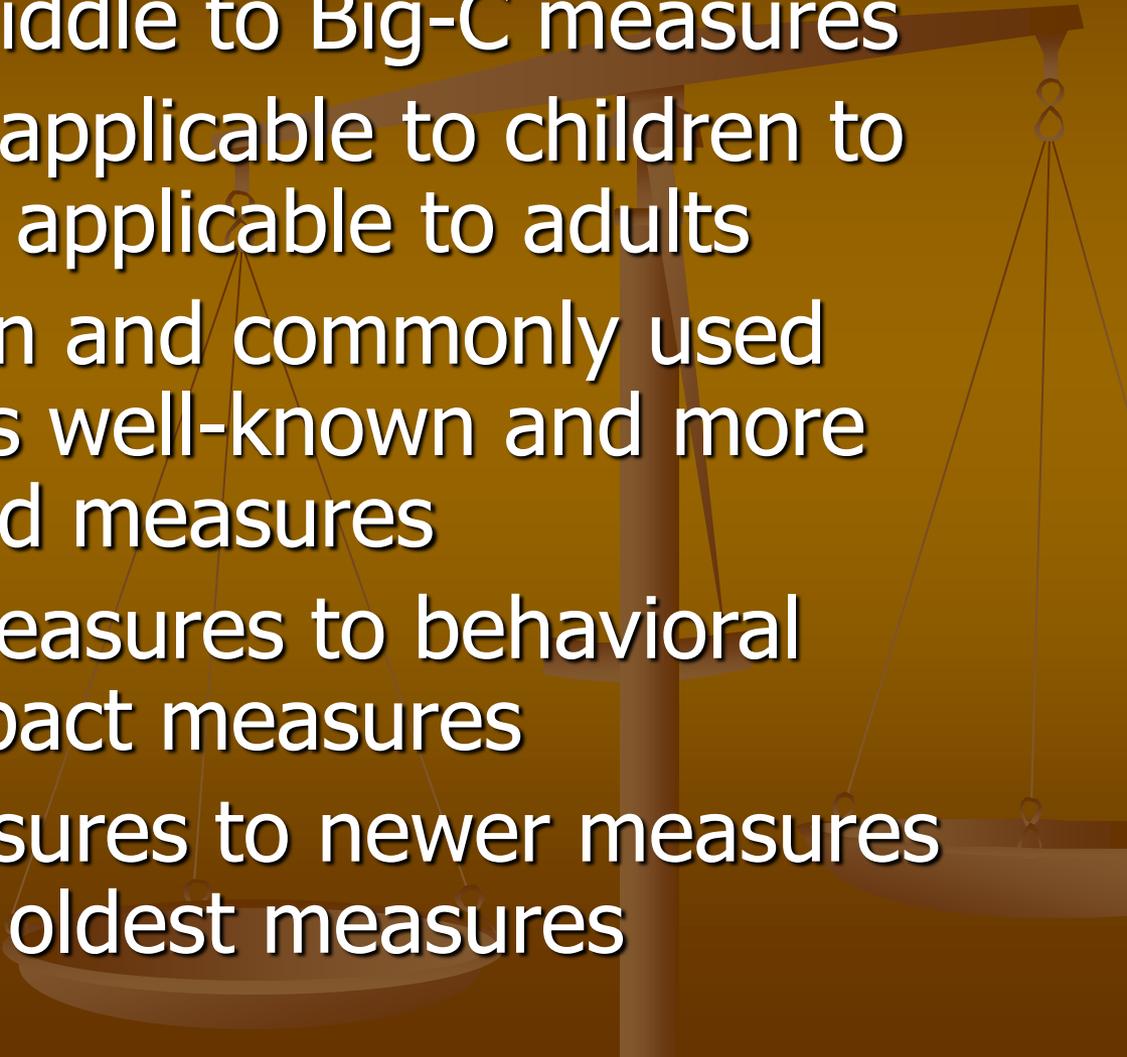
**Creativity  
Measurement:  
Big, Medium, and Little**

# Three Levels of Creativity

- *Little-c creativity – everyday level*
- **Big-C Creativity – *Genius Level***
- Medium-C CREATIVITY – TRANSITIONAL LEVEL



# Grand Tour of Measures at the Three Levels

- From little to middle to Big-C measures
  - From measures applicable to children to measures solely applicable to adults
  - From well-known and commonly used measures to less well-known and more infrequently used measures
  - From process measures to behavioral measures to impact measures
  - From older measures to newer measures and back to the oldest measures
- 

# *Little-c creativity measurement*

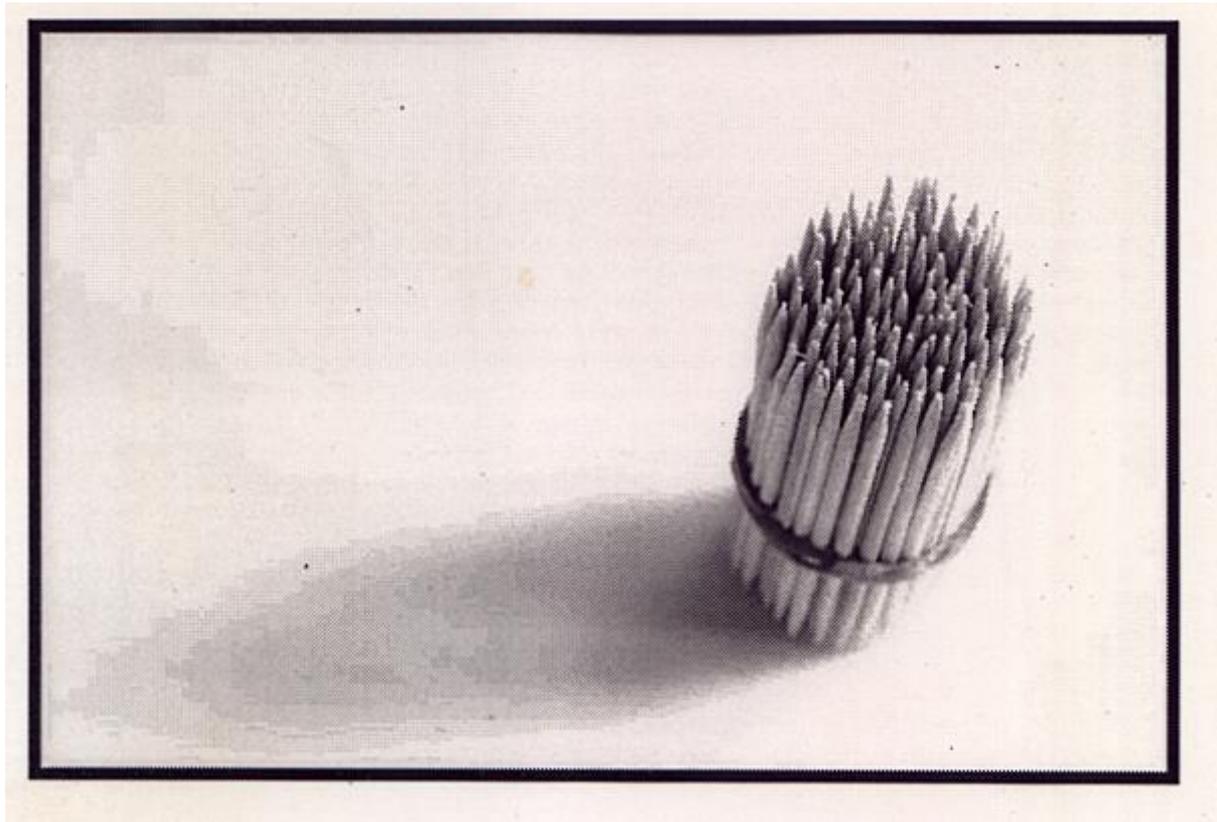
- **Process oriented**
- **Person oriented**

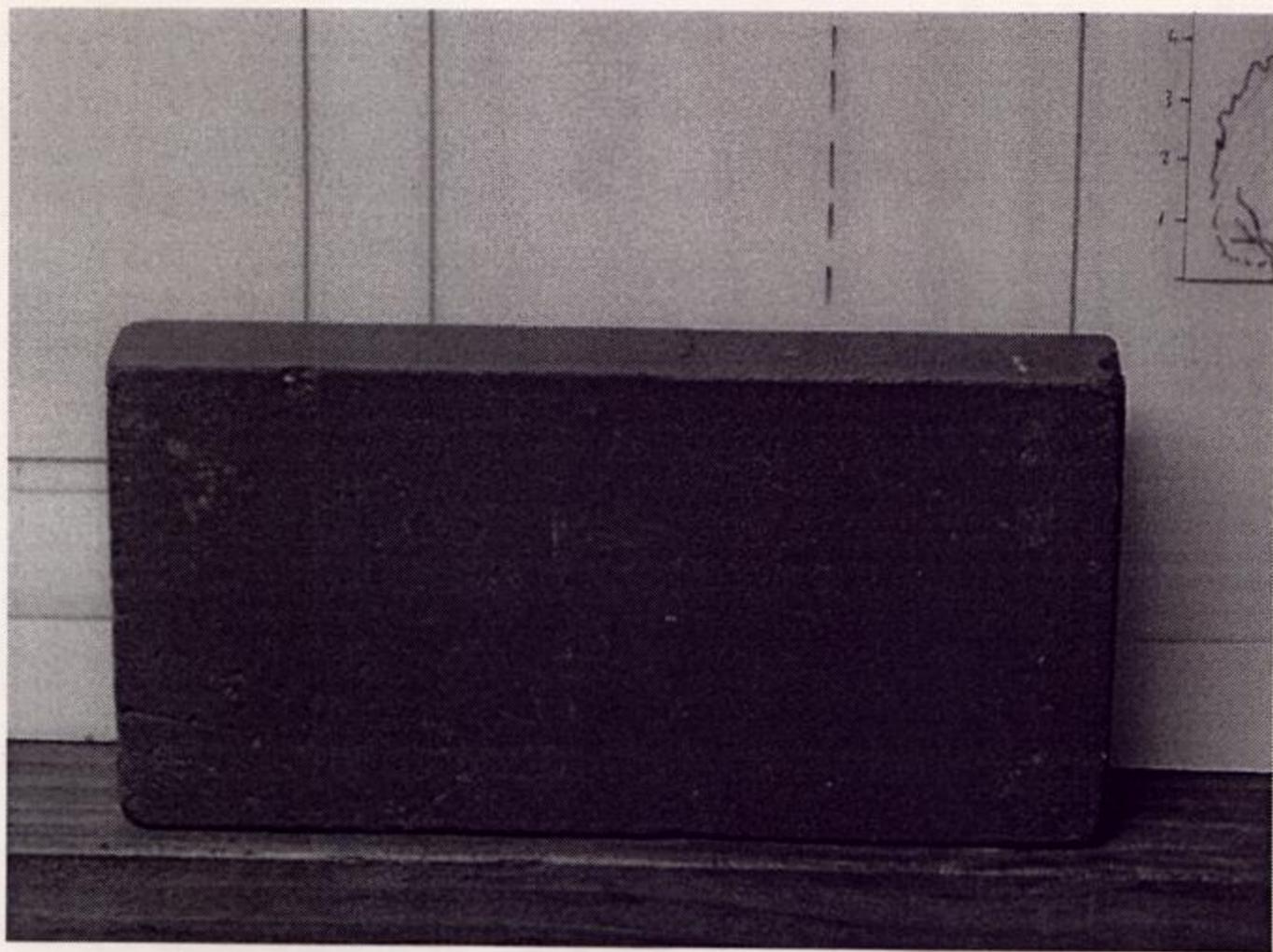


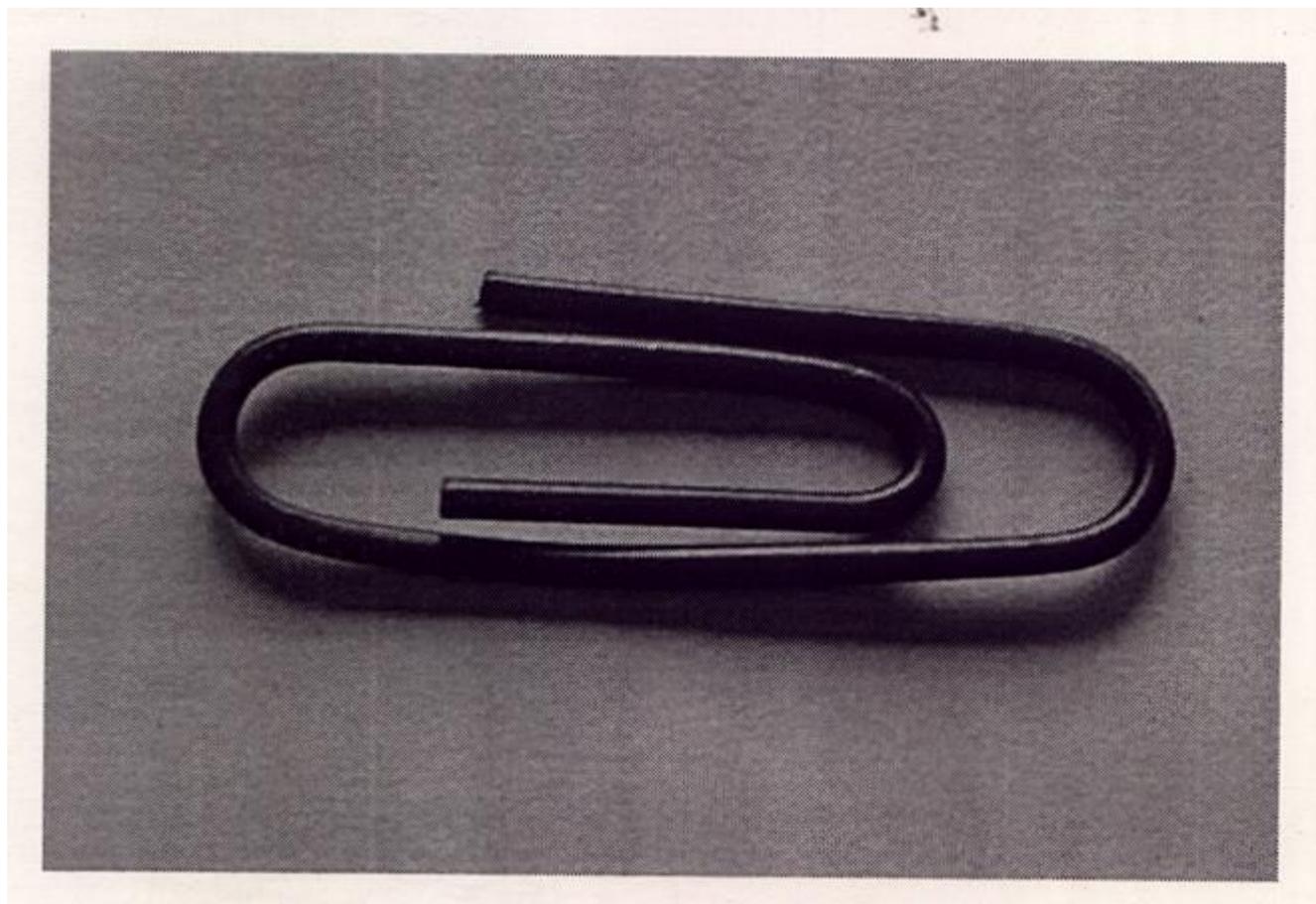
# *Little-c creativity measurement: process oriented*

- **Visual measures**
  - **Unusual uses (Guilford, 1954)**









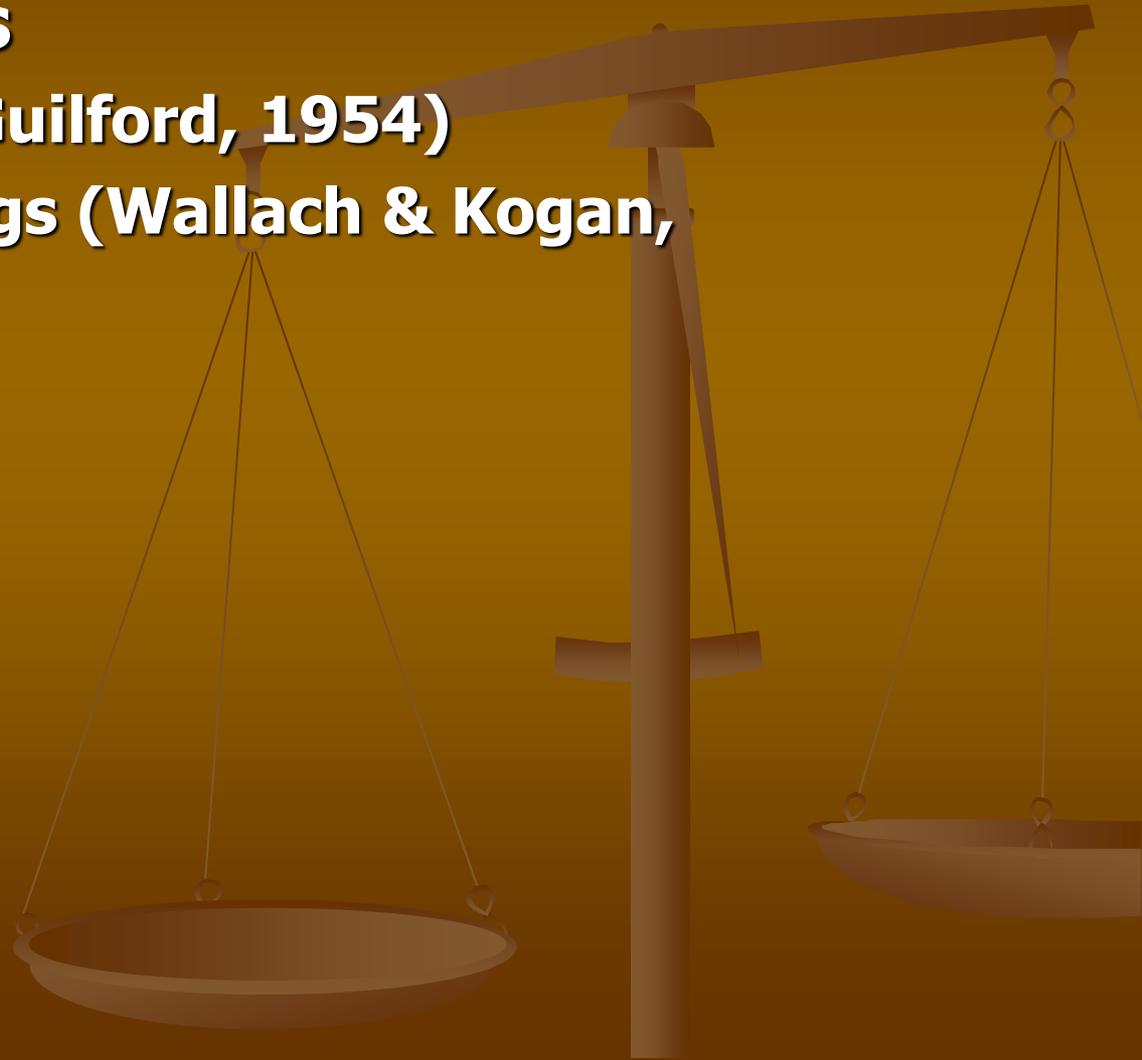
# *Little-c creativity measurement: process oriented*

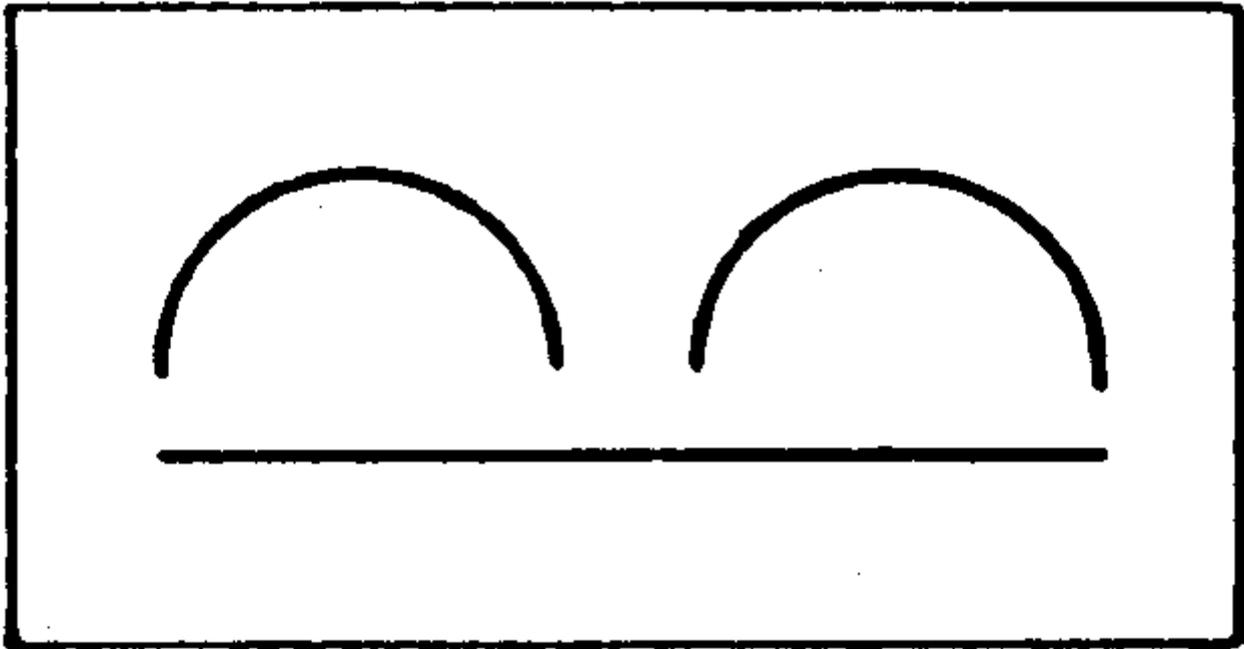
- **Visual measures**
  - **Unusual uses (Guilford, 1954)**
    - Scored for
      - Fluency
      - Originality
      - Flexibility

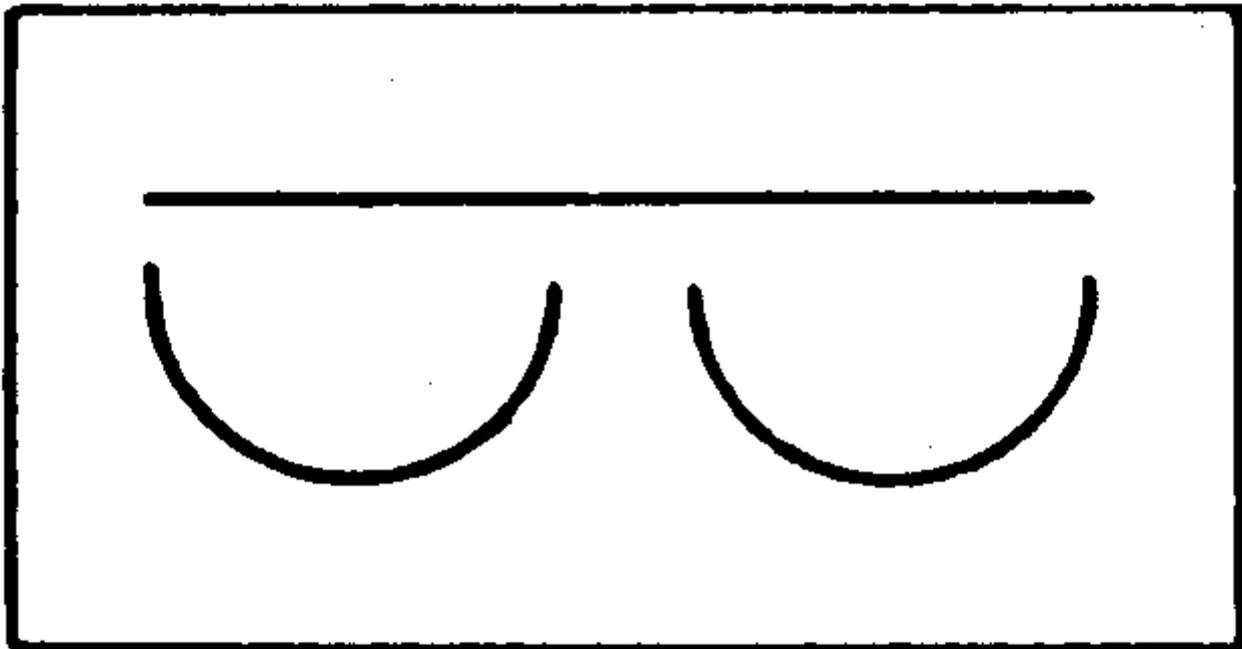


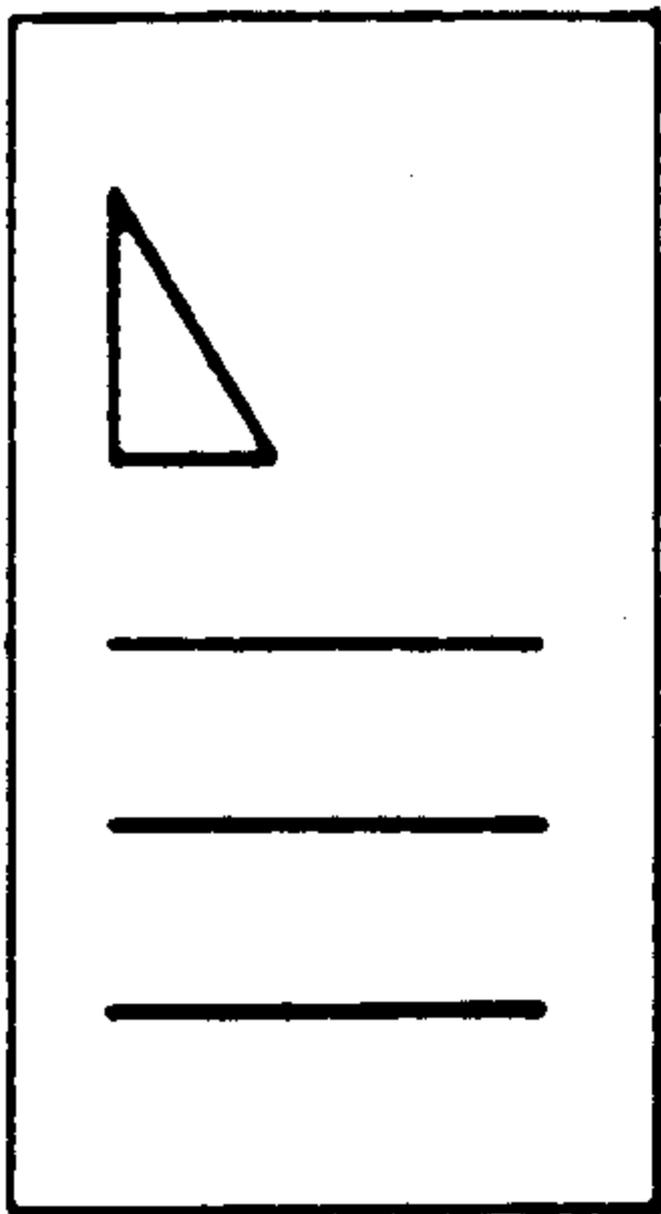
# *Little-c creativity measurement: process oriented*

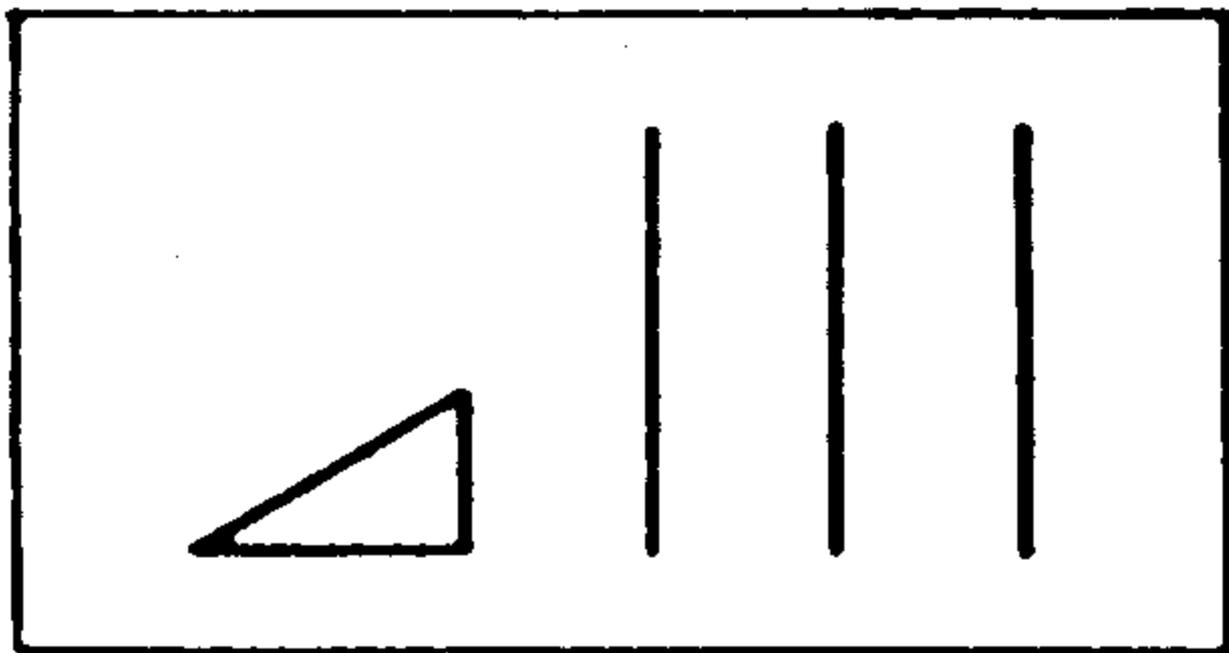
- **Visual measures**
  - **Unusual uses (Guilford, 1954)**
  - **Pattern meanings (Wallach & Kogan, 1965)**

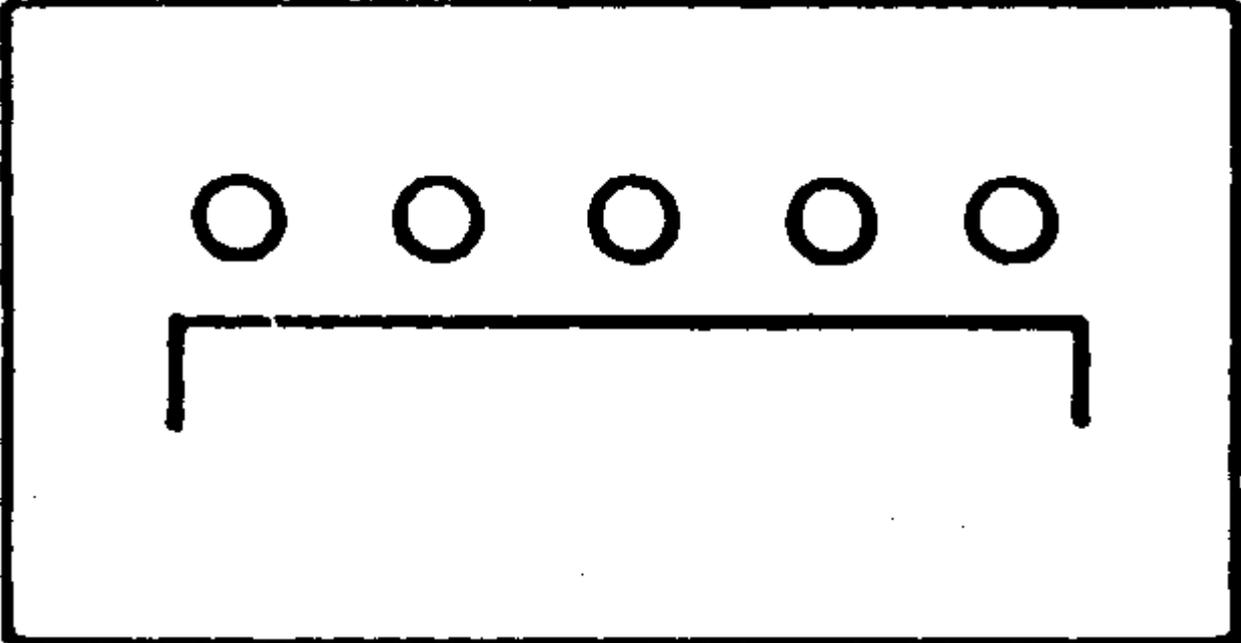


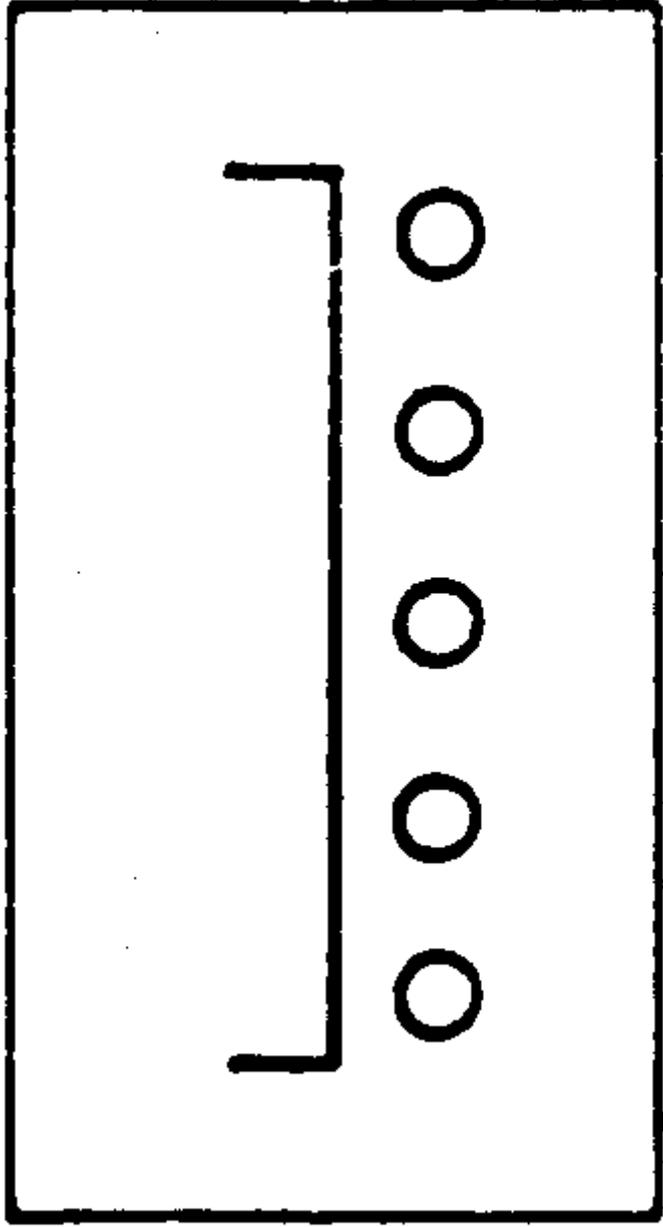


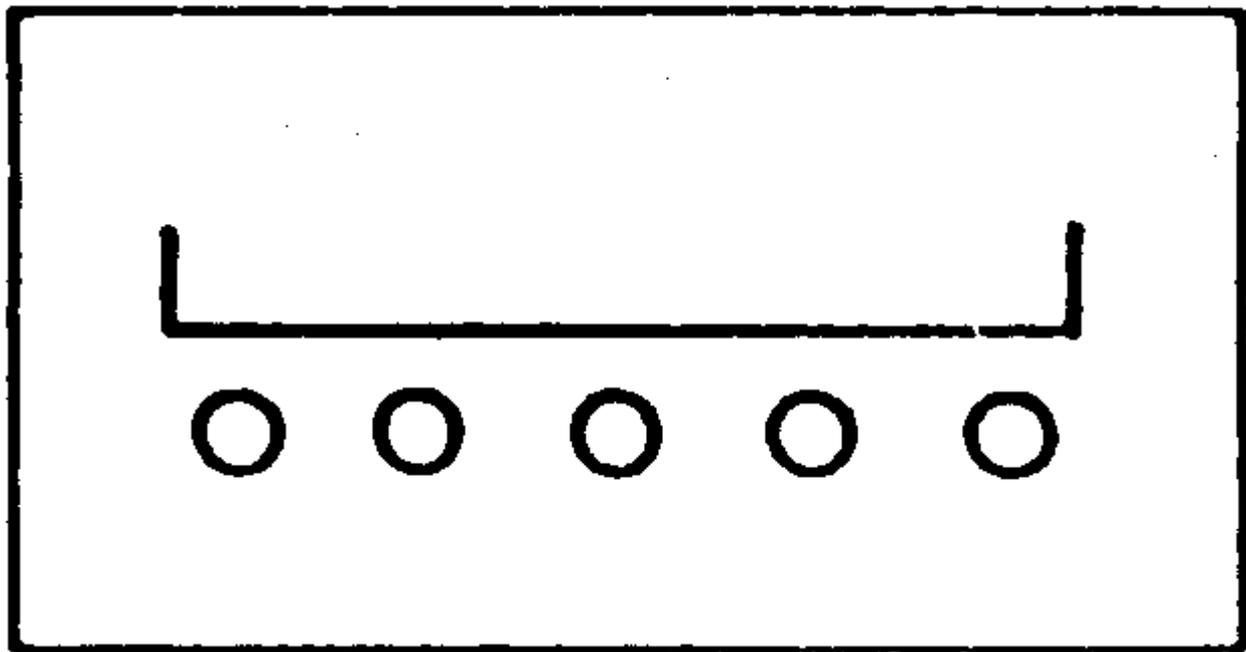


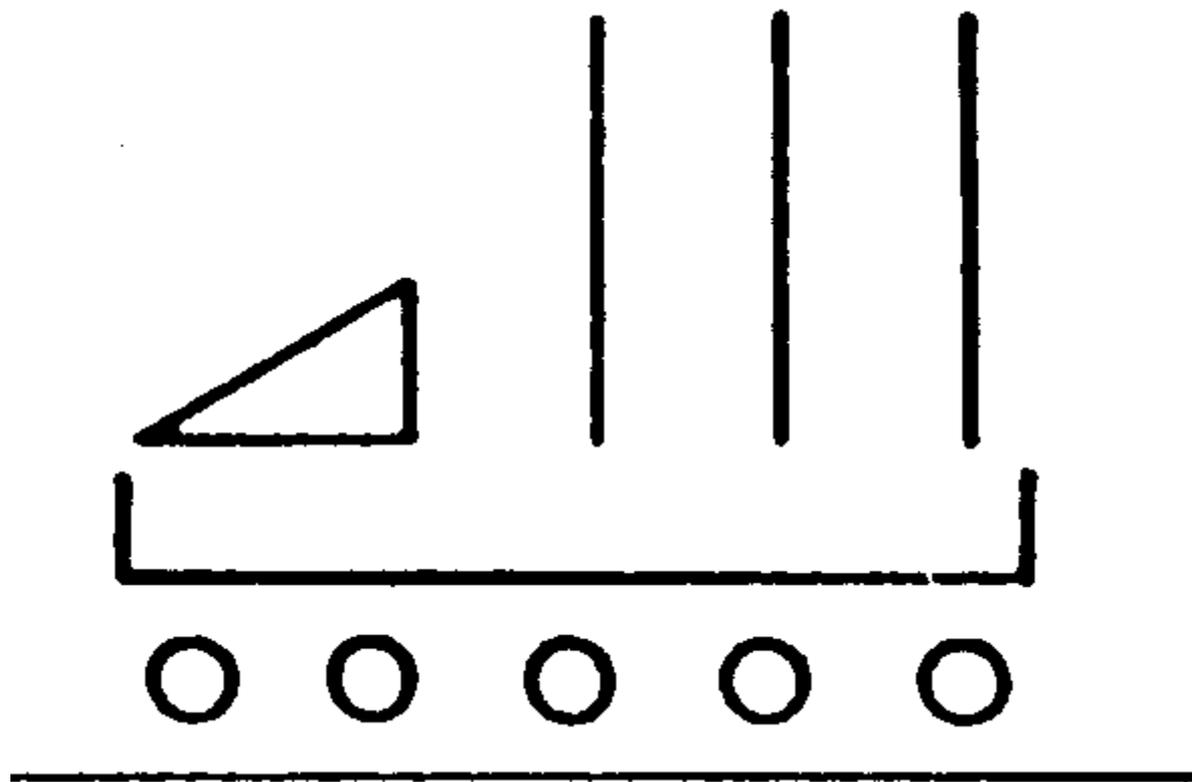






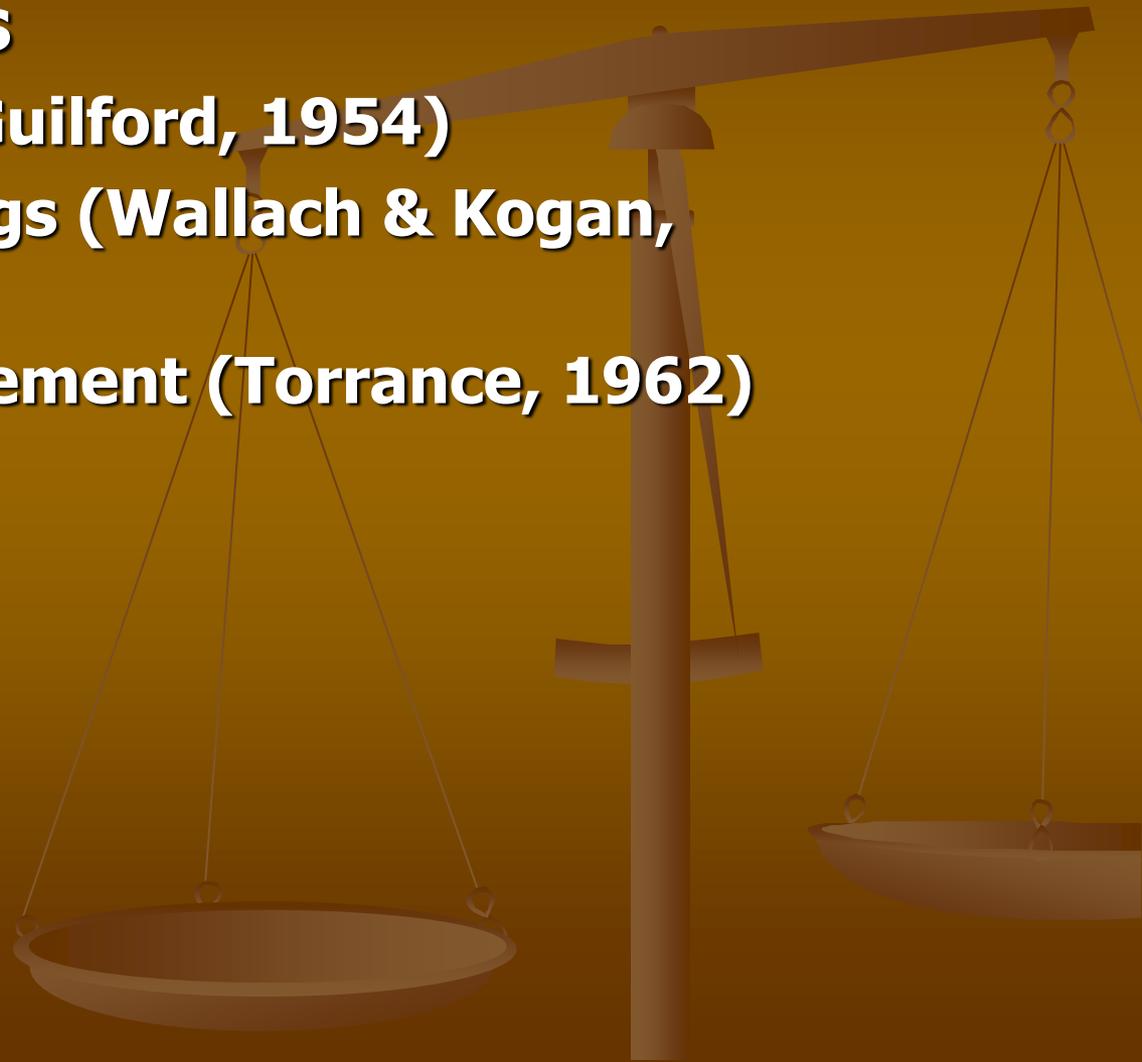




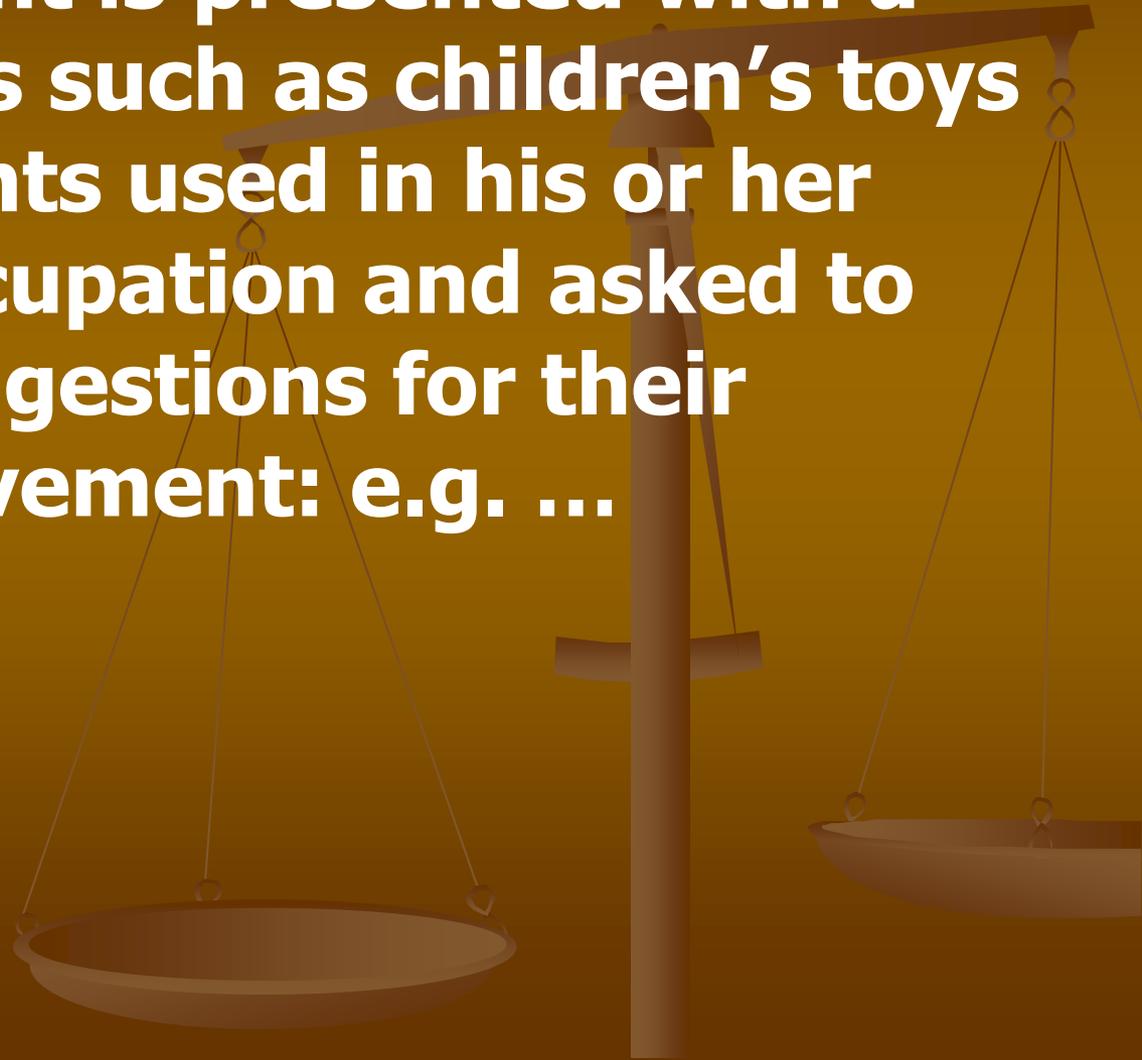


# *Little-c creativity measurement: process oriented*

- **Visual measures**
  - **Unusual uses (Guilford, 1954)**
  - **Pattern meanings (Wallach & Kogan, 1965)**
  - **Product improvement (Torrance, 1962)**



**The participant is presented with a series of objects such as children's toys or instruments used in his or her particular occupation and asked to make suggestions for their improvement: e.g. ...**

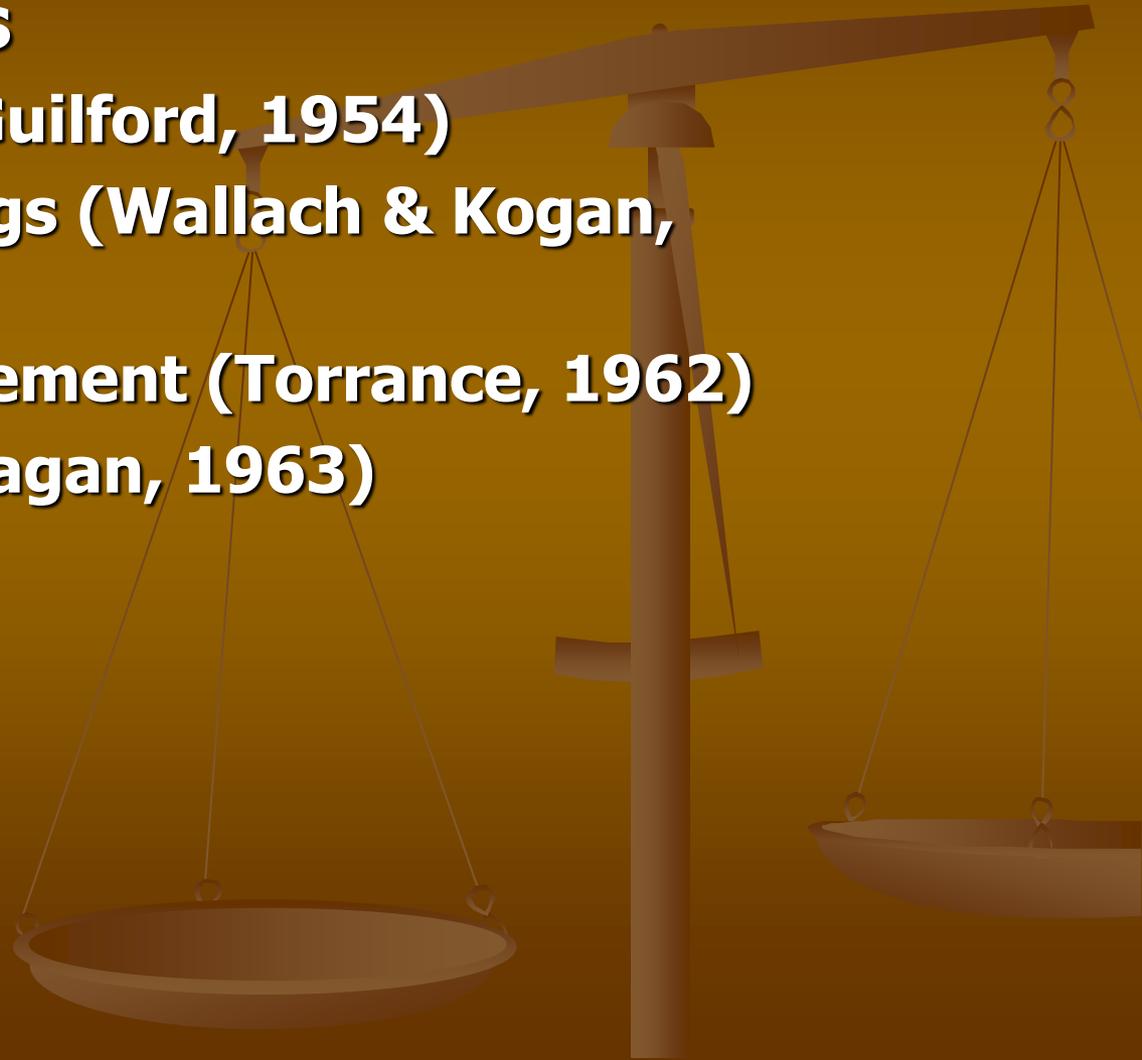


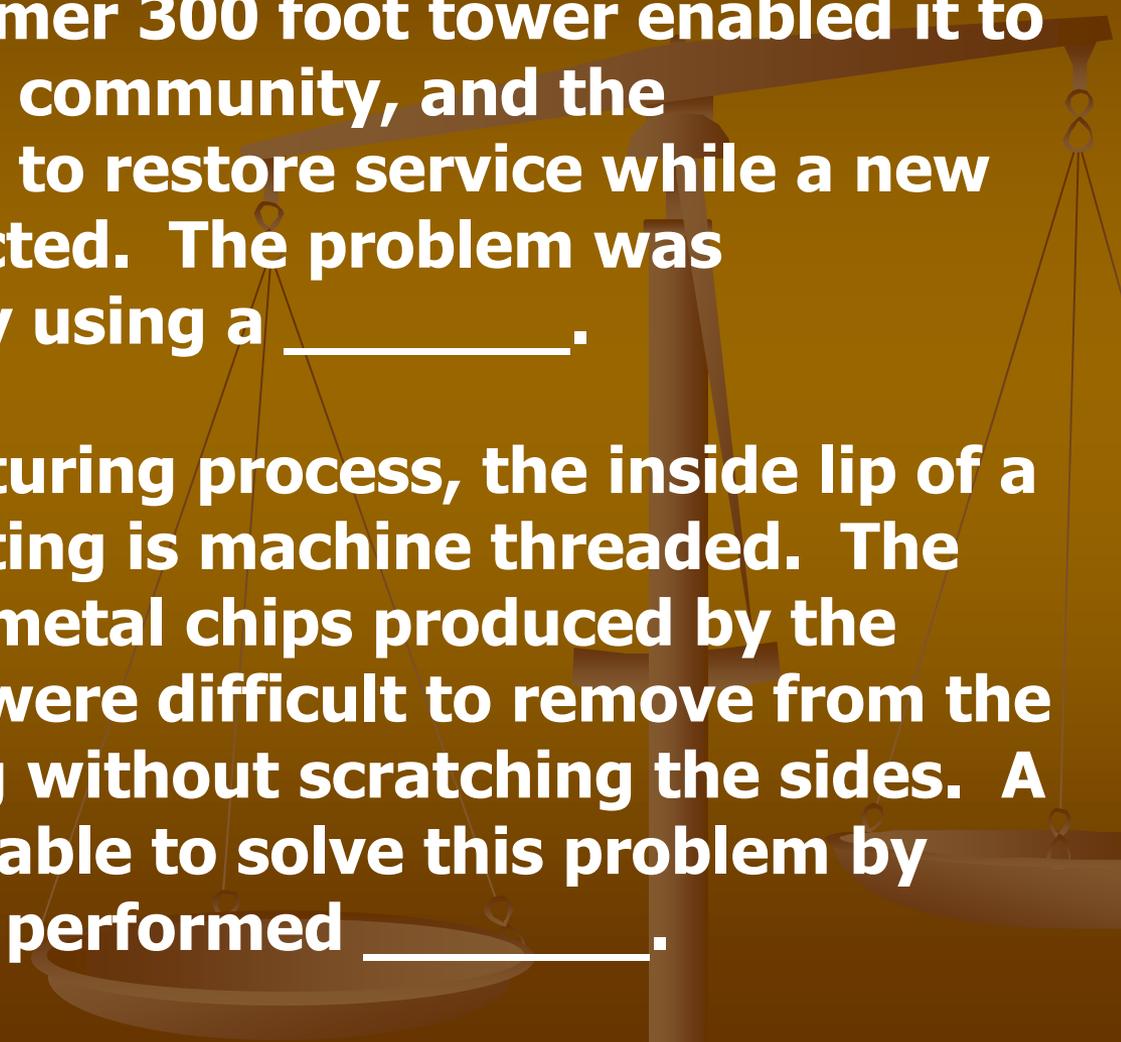


# *Little-c creativity measurement: process oriented*

## ■ **Visual measures**

- **Unusual uses (Guilford, 1954)**
- **Pattern meanings (Wallach & Kogan, 1965)**
- **Product improvement (Torrance, 1962)**
- **Ingenuity (Flanagan, 1963)**





**A very rare wind storm destroyed the transmission tower of a television station in a small town. The station was located in a town in a flat prairie with no tall buildings. Its former 300 foot tower enabled it to serve a large farming community, and the management wanted to restore service while a new tower was being erected. The problem was temporarily solved by using a \_\_\_\_\_.**

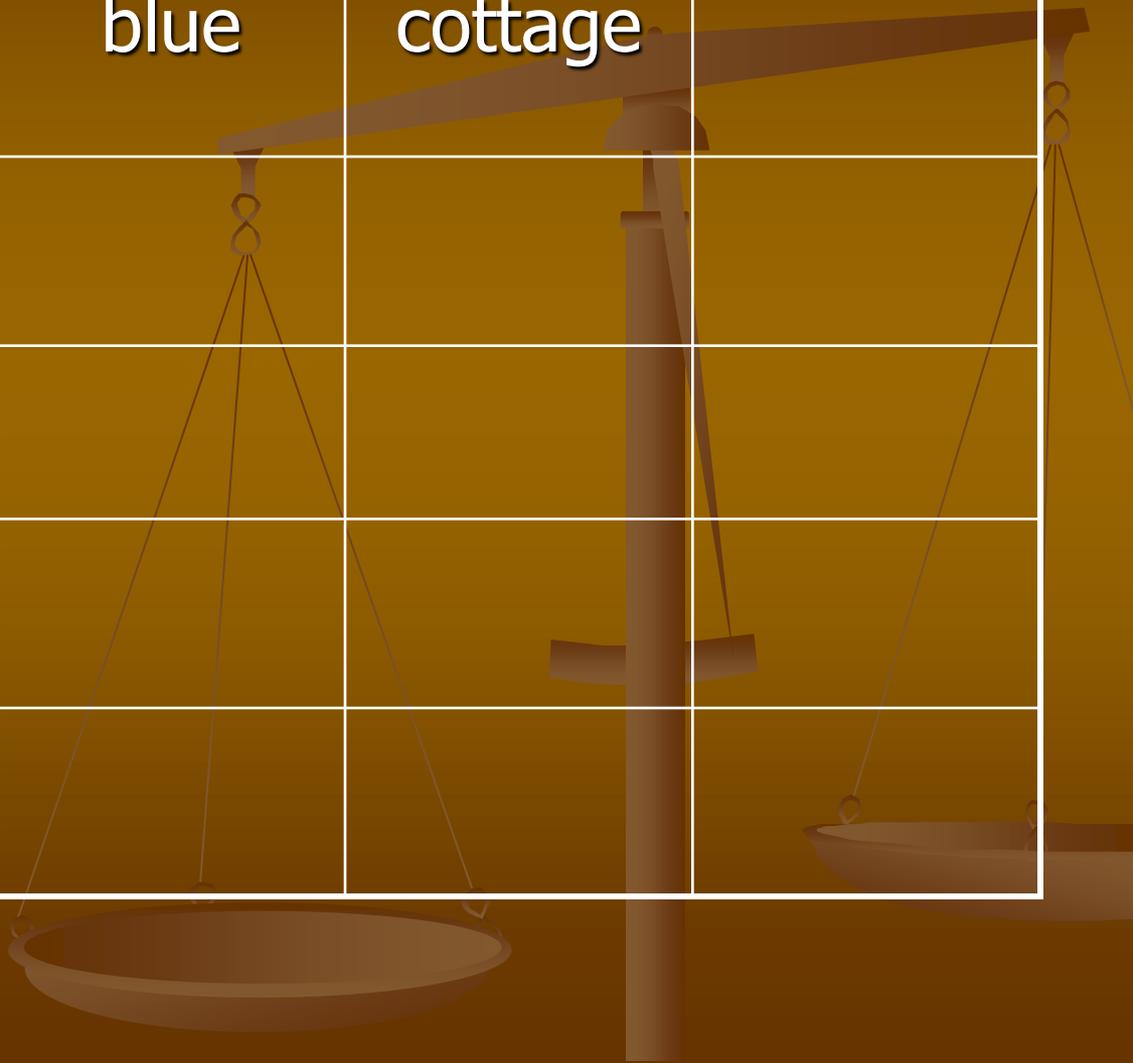
**As part of a manufacturing process, the inside lip of a deep cup shaped casting is machine threaded. The company found that metal chips produced by the threading operation were difficult to remove from the bottom of the casting without scratching the sides. A design engineer was able to solve this problem by having the operation performed \_\_\_\_\_.**

# *Little-c creativity measurement: process oriented*

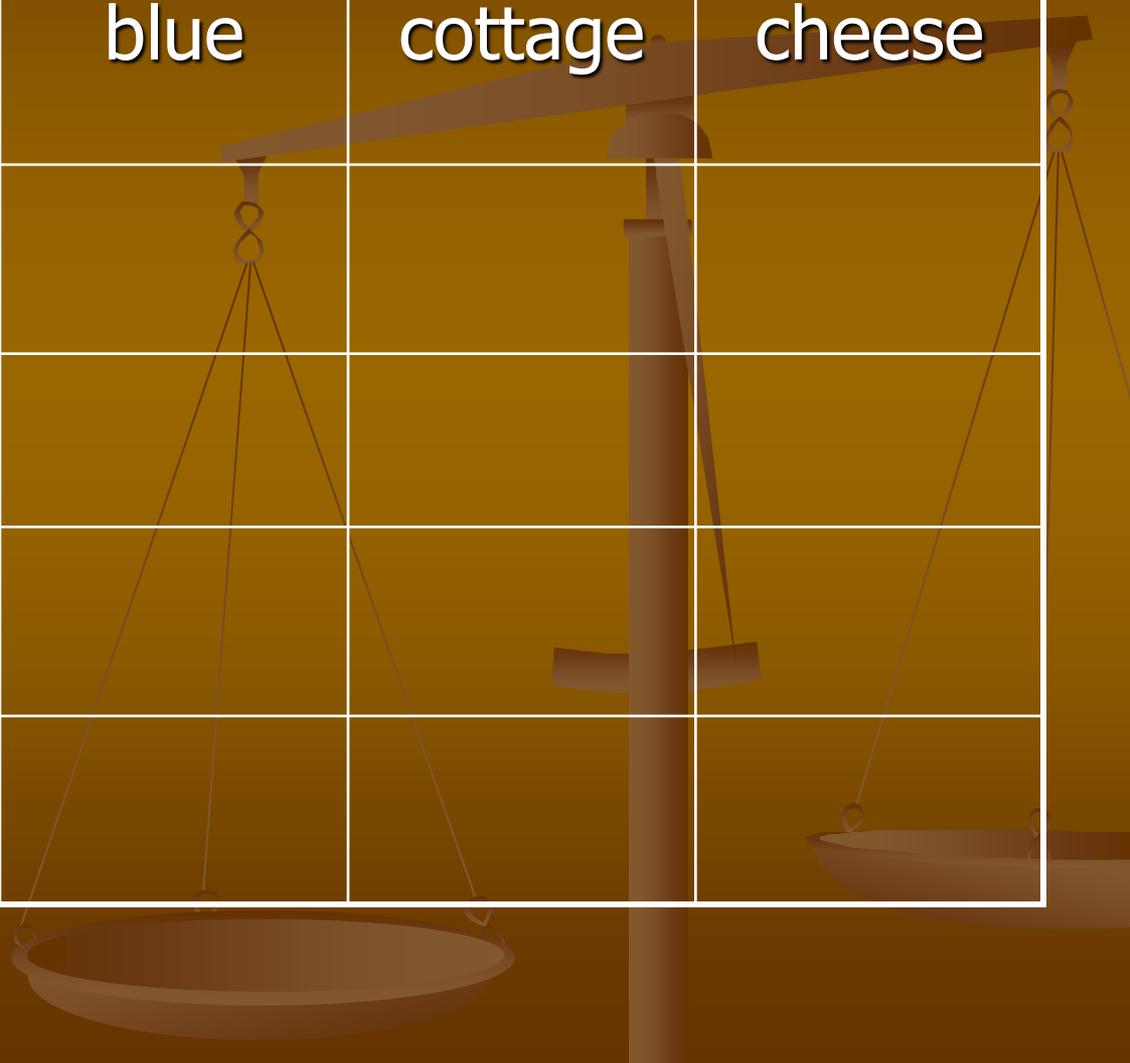
- **Verbal measurement**
  - **Remote associates (Mednick, 1962)**

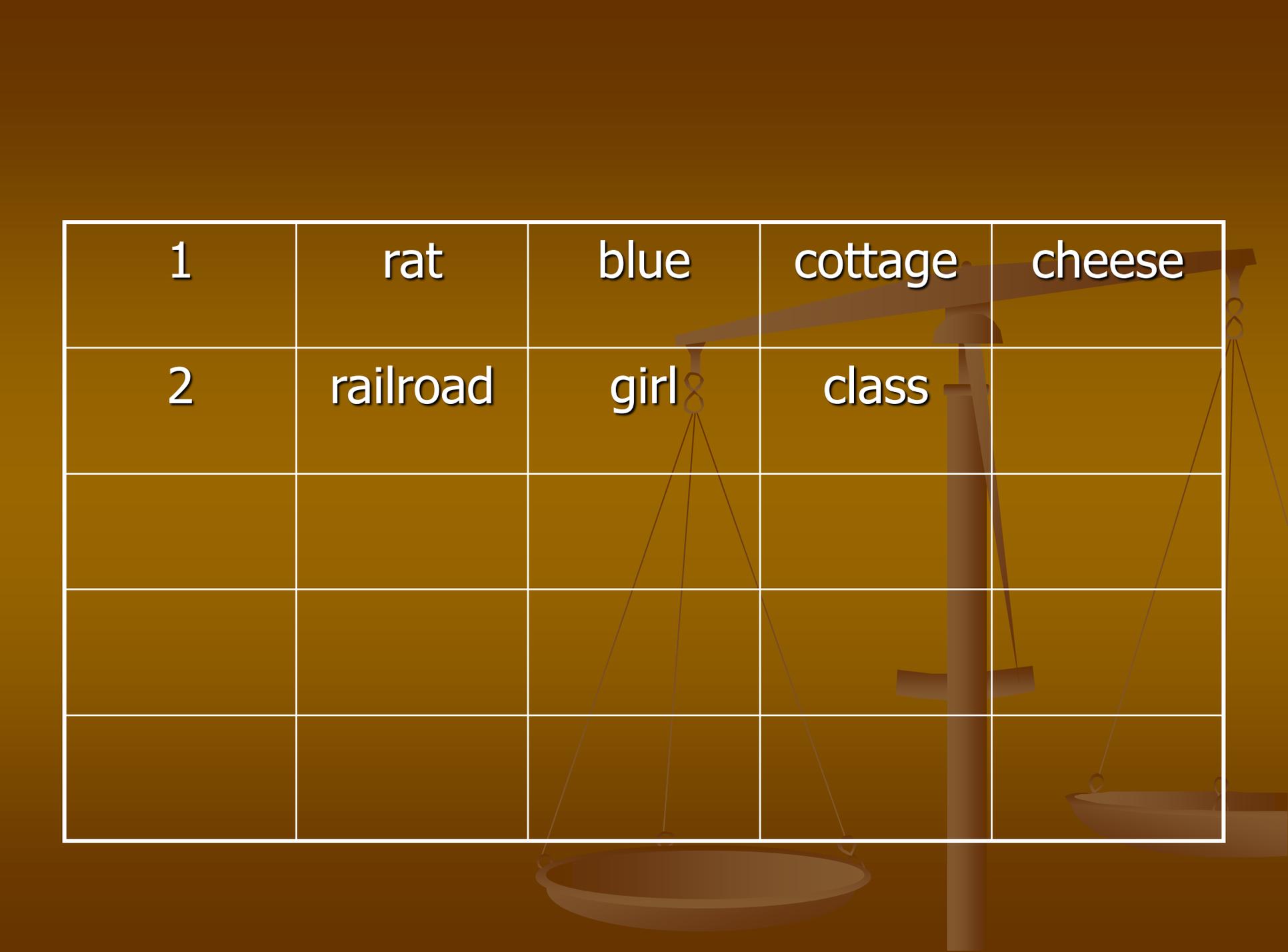


1	rat	blue	cottage

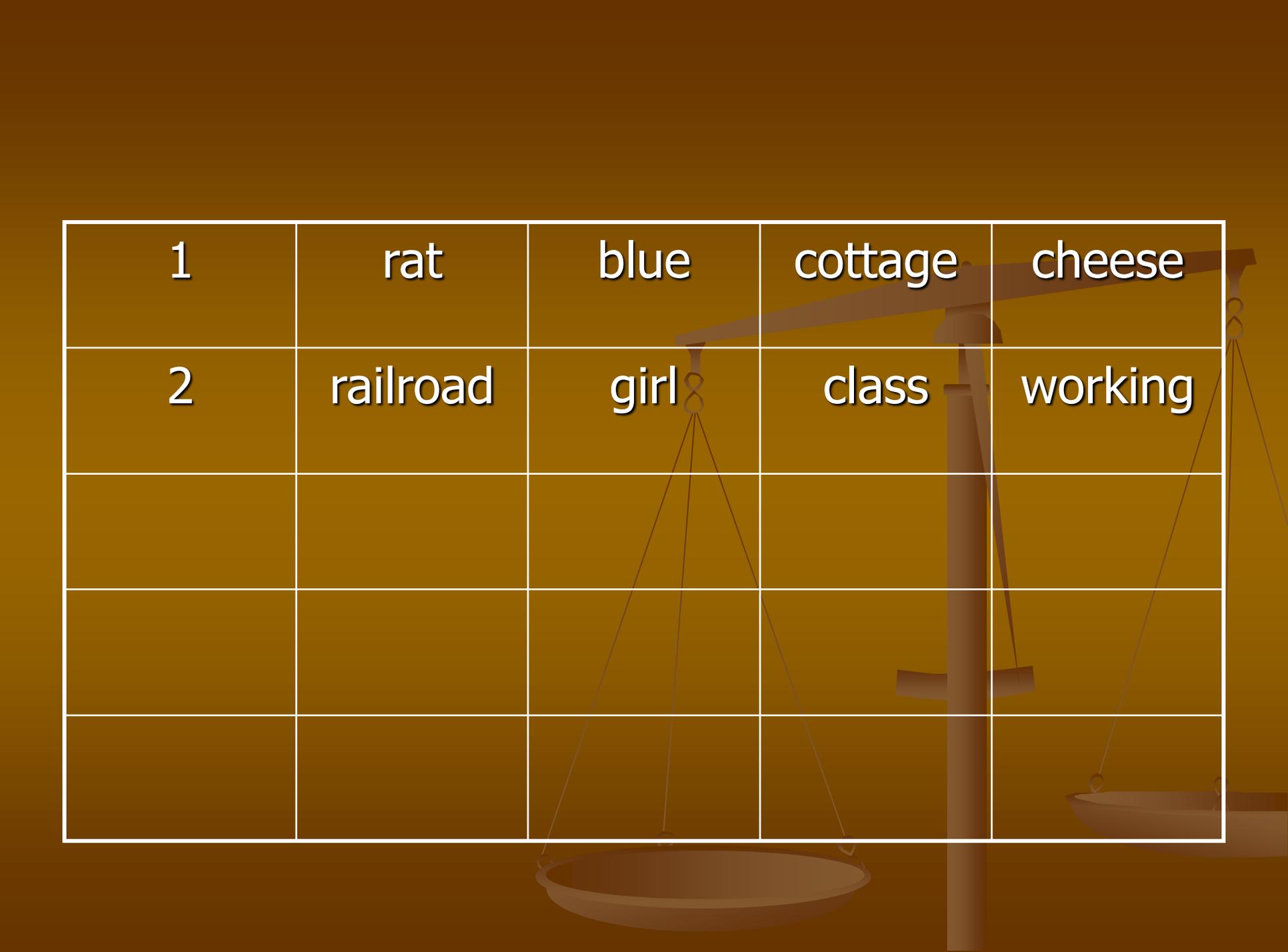


1	rat	blue	cottage	cheese

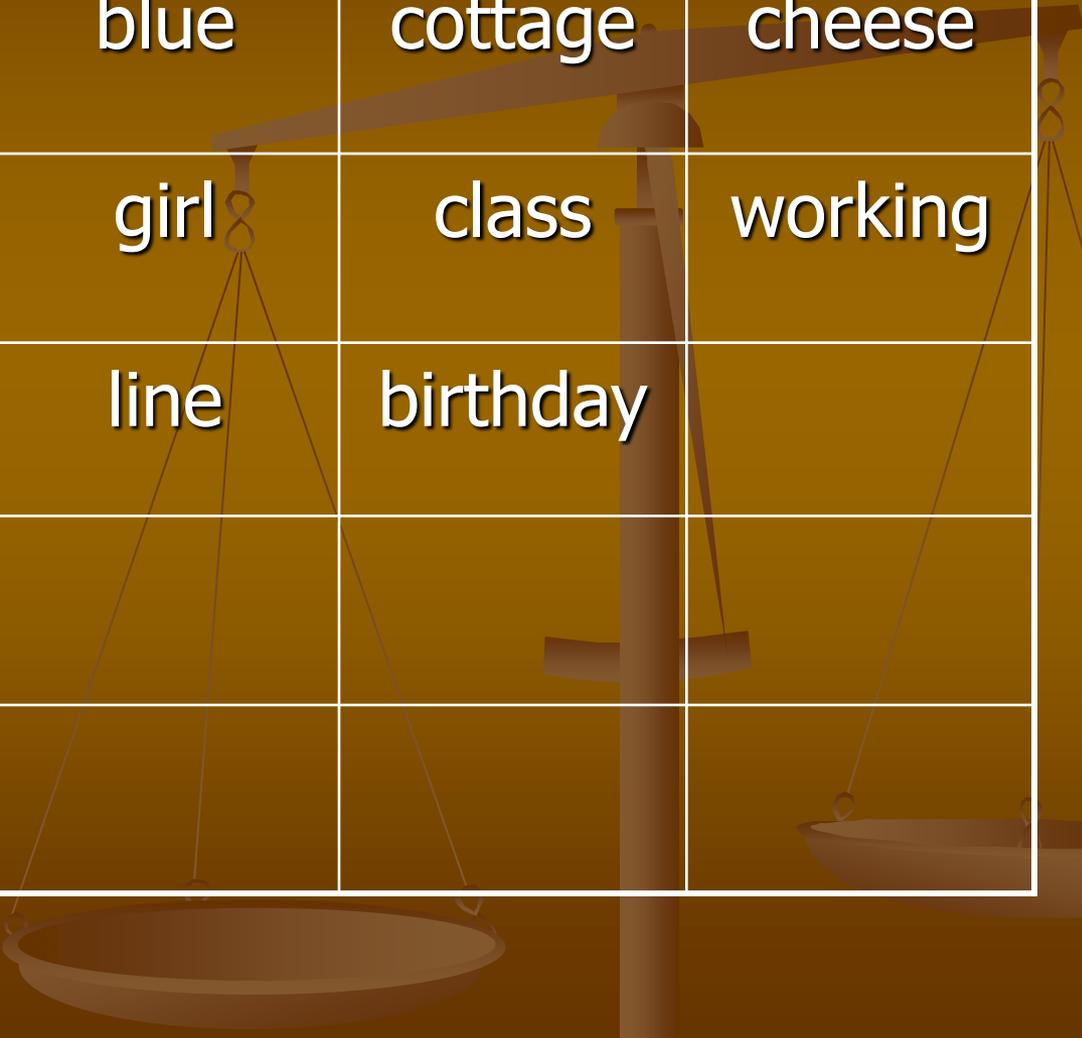




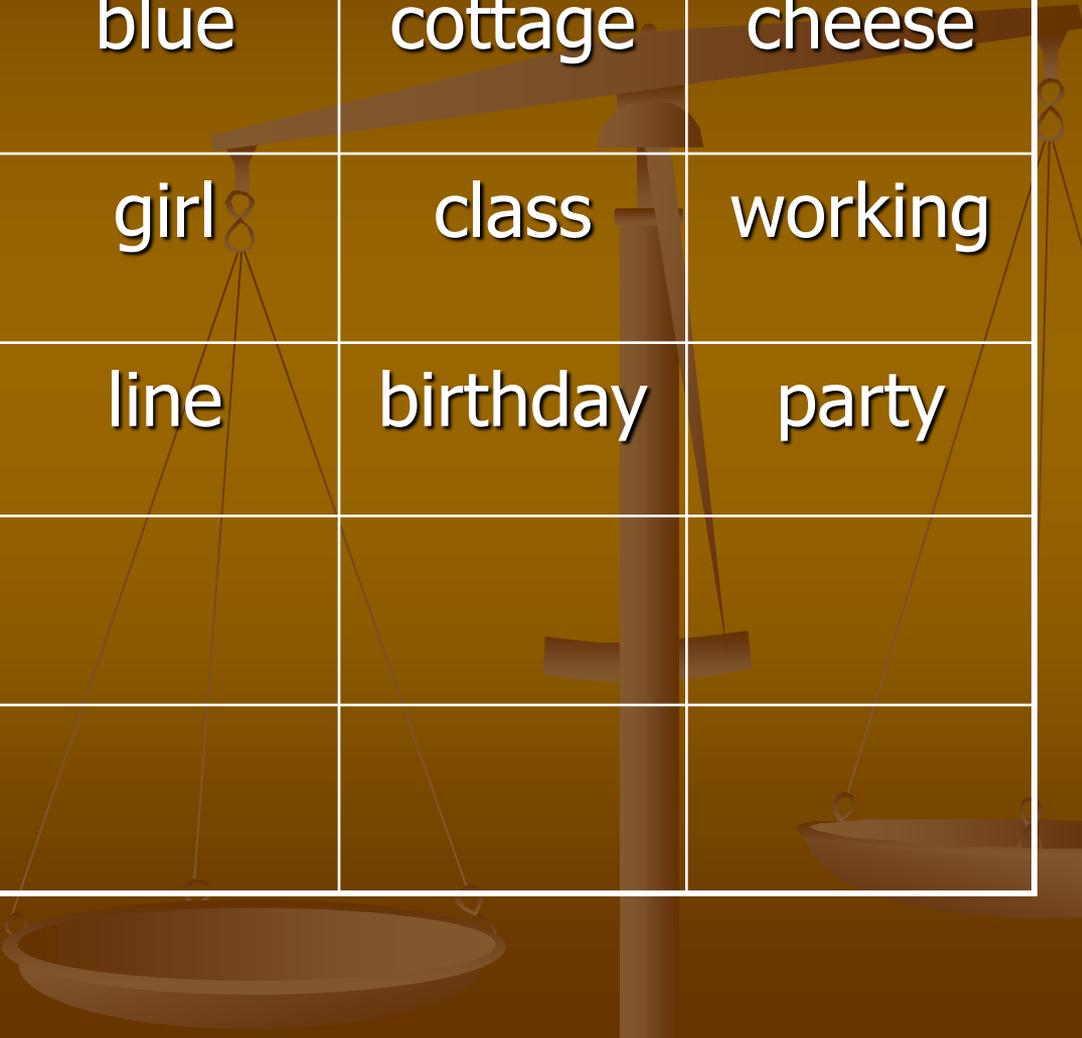
1	rat	blue	cottage	cheese
2	railroad	girl	class	



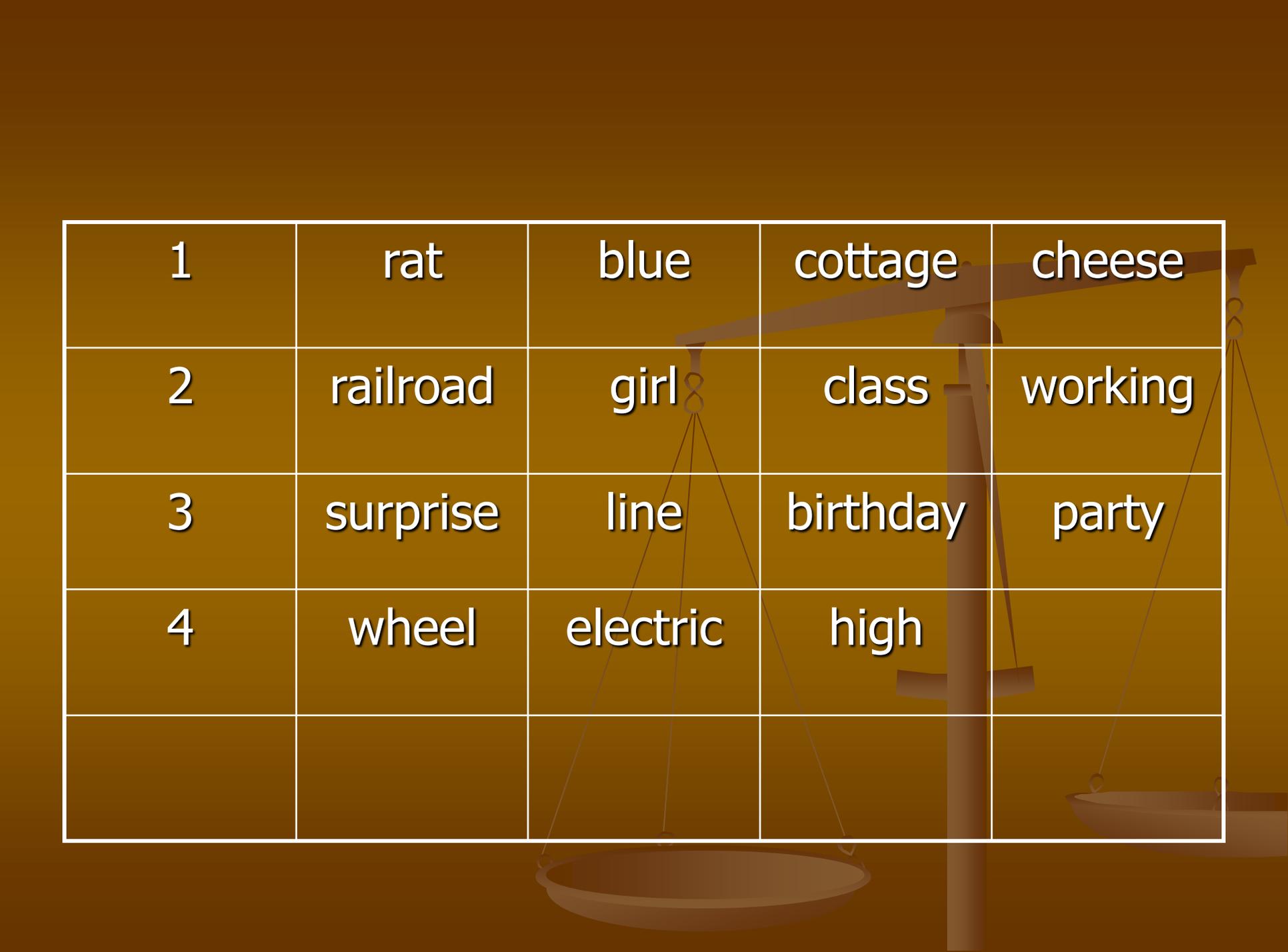
1	rat	blue	cottage	cheese
2	railroad	girl	class	working



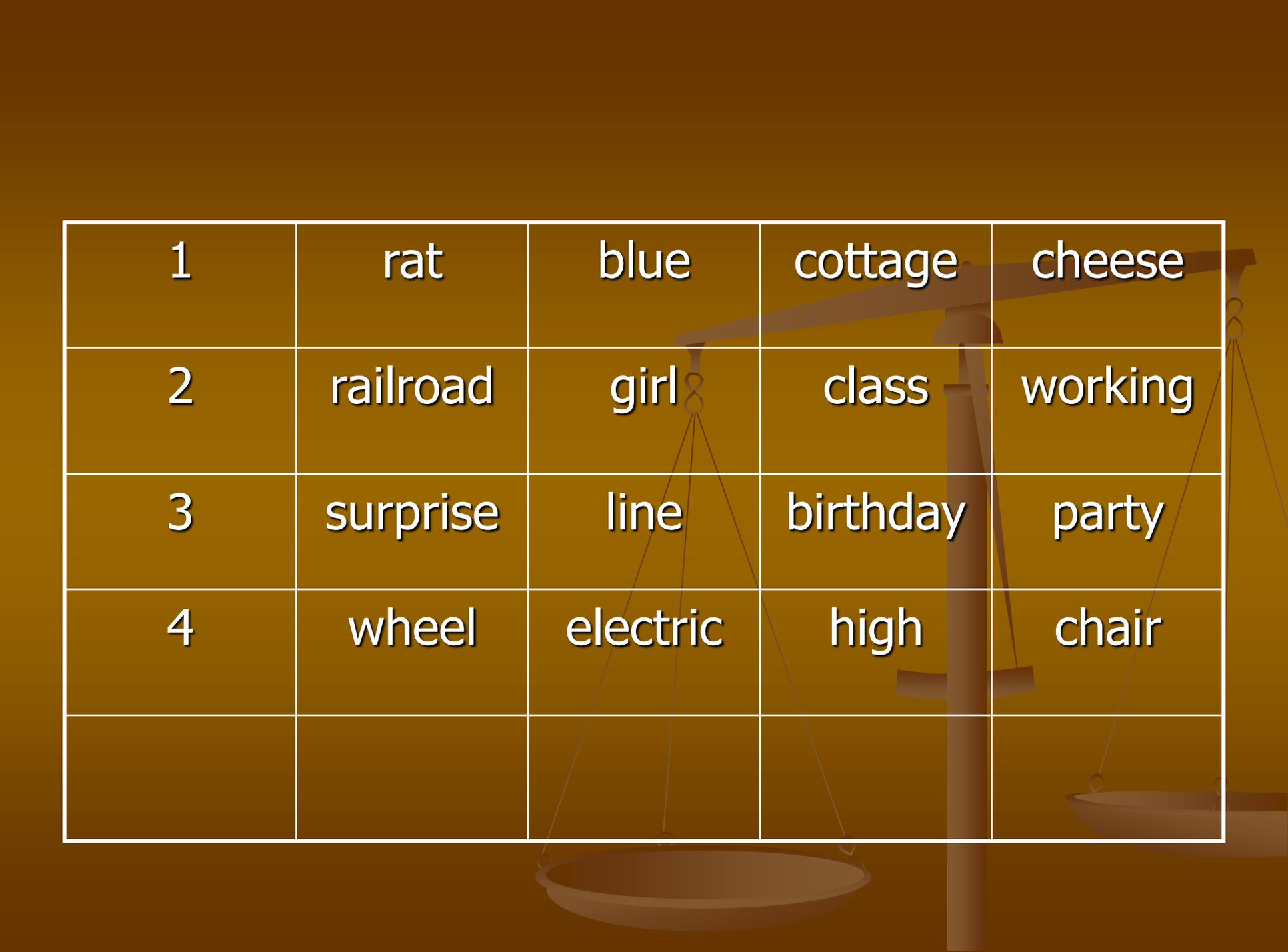
1	rat	blue	cottage	cheese
2	railroad	girl	class	working
3	surprise	line	birthday	



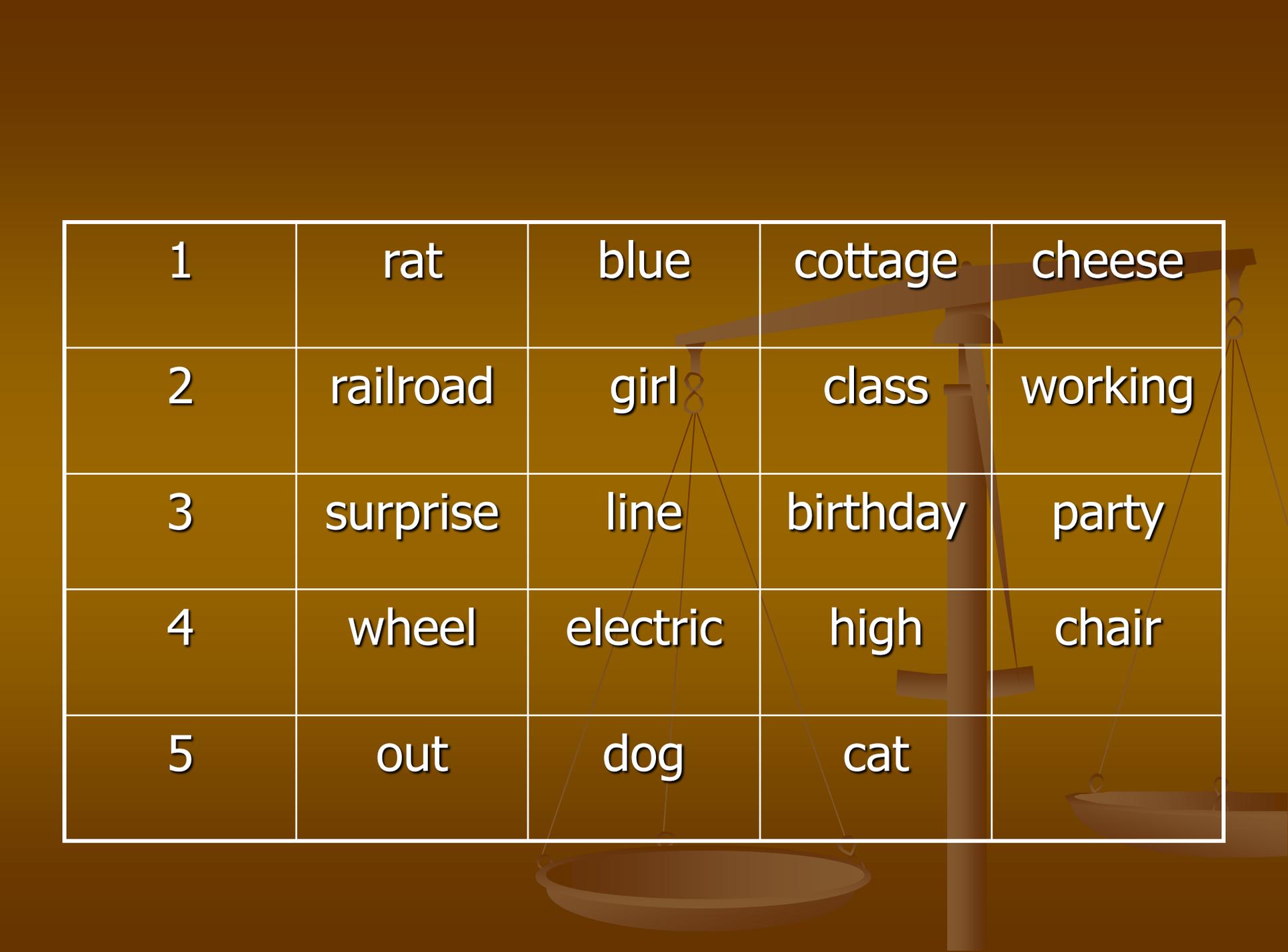
1	rat	blue	cottage	cheese
2	railroad	girl	class	working
3	surprise	line	birthday	party



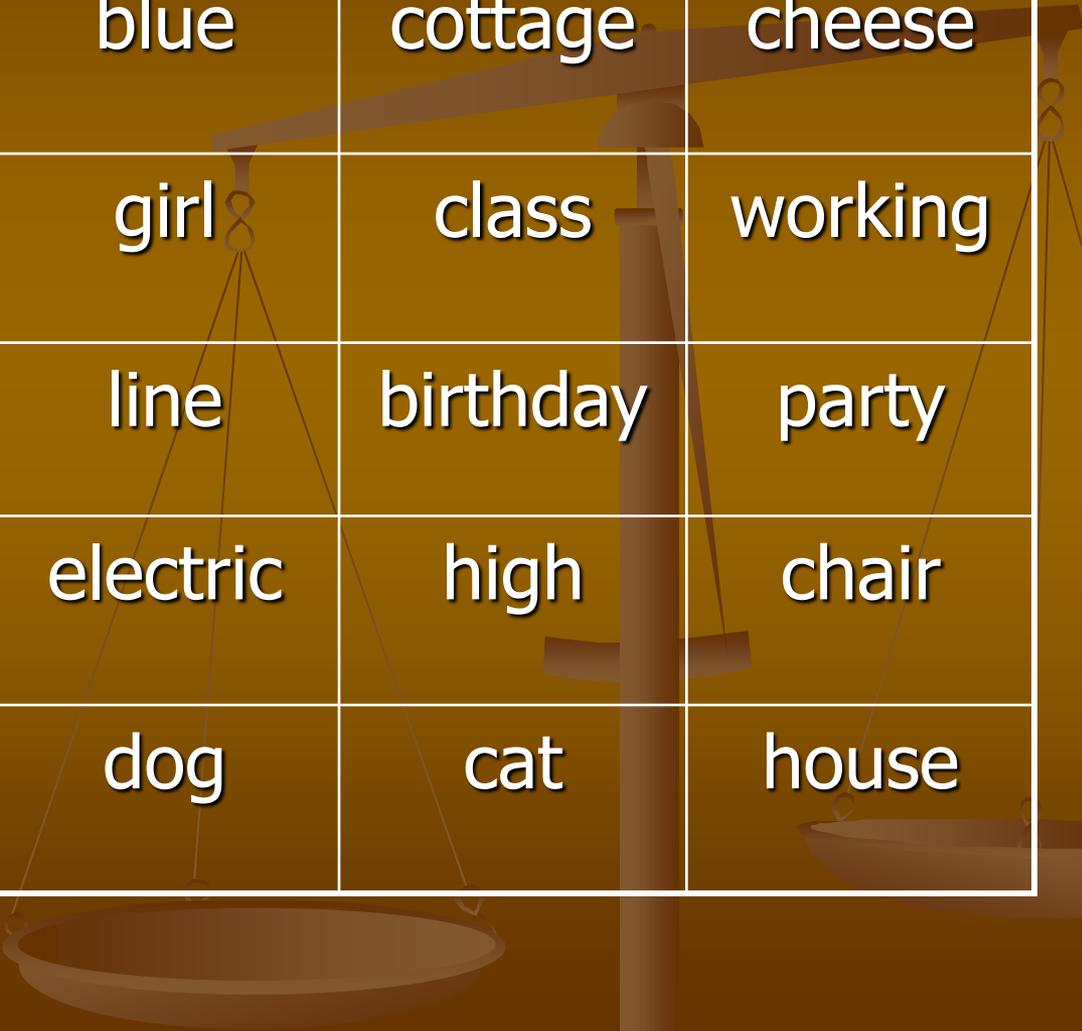
1	rat	blue	cottage	cheese
2	railroad	girl	class	working
3	surprise	line	birthday	party
4	wheel	electric	high	



1	rat	blue	cottage	cheese
2	railroad	girl	class	working
3	surprise	line	birthday	party
4	wheel	electric	high	chair



1	rat	blue	cottage	cheese
2	railroad	girl	class	working
3	surprise	line	birthday	party
4	wheel	electric	high	chair
5	out	dog	cat	



1	rat	blue	cottage	cheese
2	railroad	girl	class	working
3	surprise	line	birthday	party
4	wheel	electric	high	chair
5	out	dog	cat	house

# *Little-c creativity measurement: process oriented*

- **Verbal measurement**
  - **Remote associates (Mednick, 1962)**
  - **Word associations (Getzels & Jackson, 1962)**



**Write as many meanings as you can for each of the following words:**

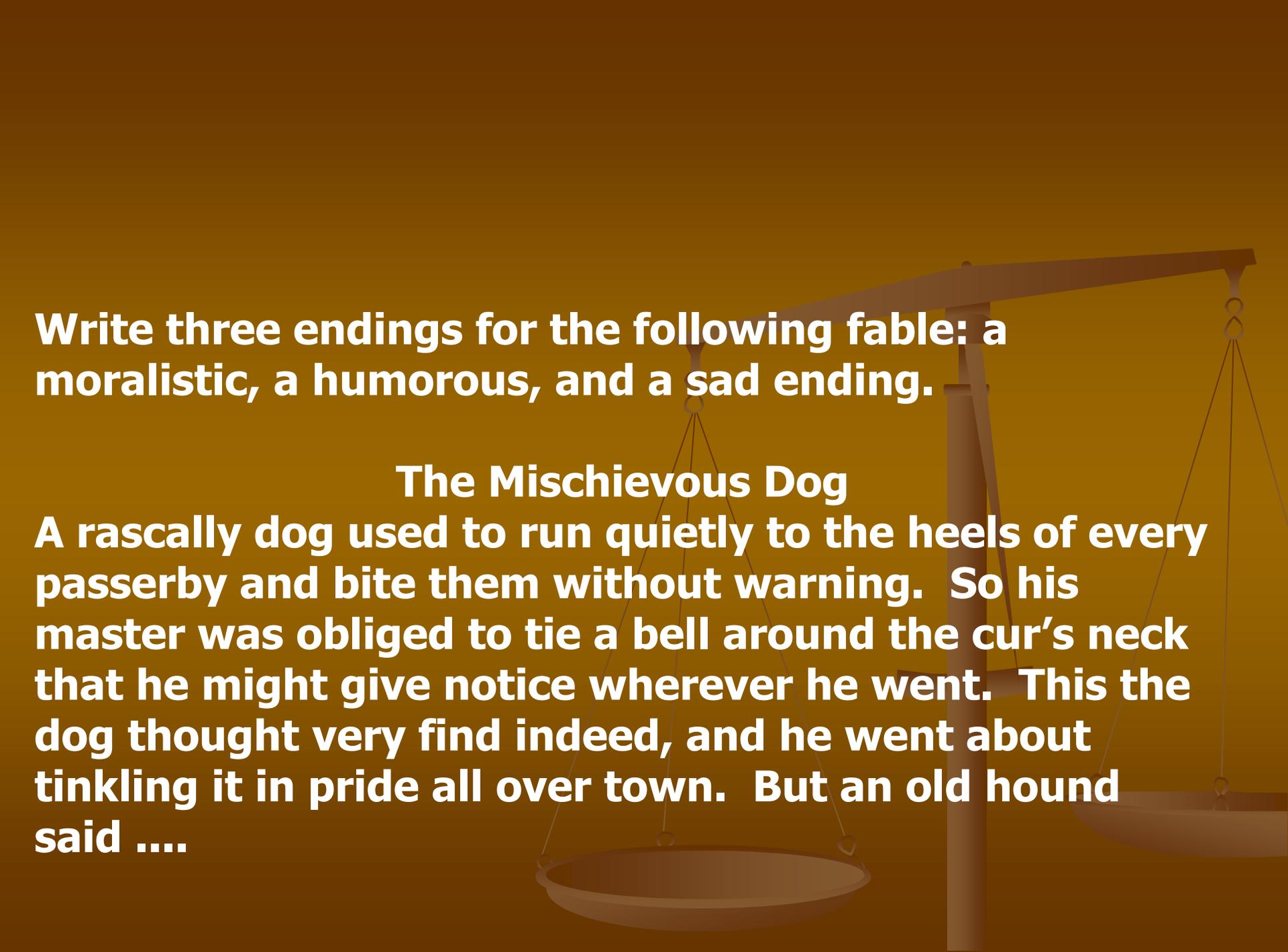
- **duck**
- **sack**
- **pitch**
- **fair**



# *Little-c creativity measurement: process oriented*

- **Verbal measurement**
  - Remote associates (Mednick, 1962)
  - Word associations (Getzels & Jackson, 1962)
  - Fable endings (Getzels & Jackson, 1962)





**Write three endings for the following fable: a moralistic, a humorous, and a sad ending.**

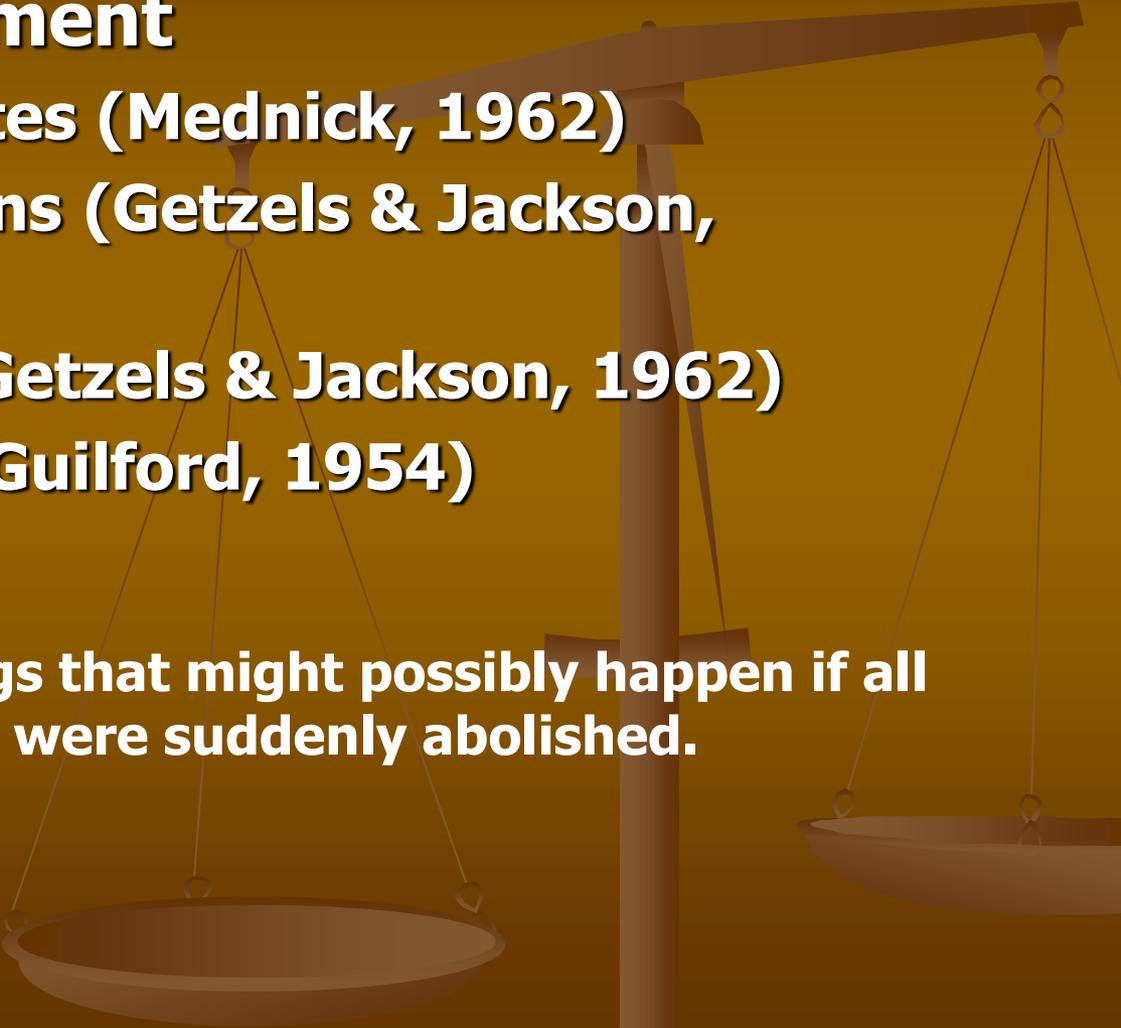
### **The Mischievous Dog**

**A rascally dog used to run quietly to the heels of every passerby and bite them without warning. So his master was obliged to tie a bell around the cur's neck that he might give notice wherever he went. This the dog thought very find indeed, and he went about tinkling it in pride all over town. But an old hound said ....**

# *Little-c creativity measurement: process oriented*

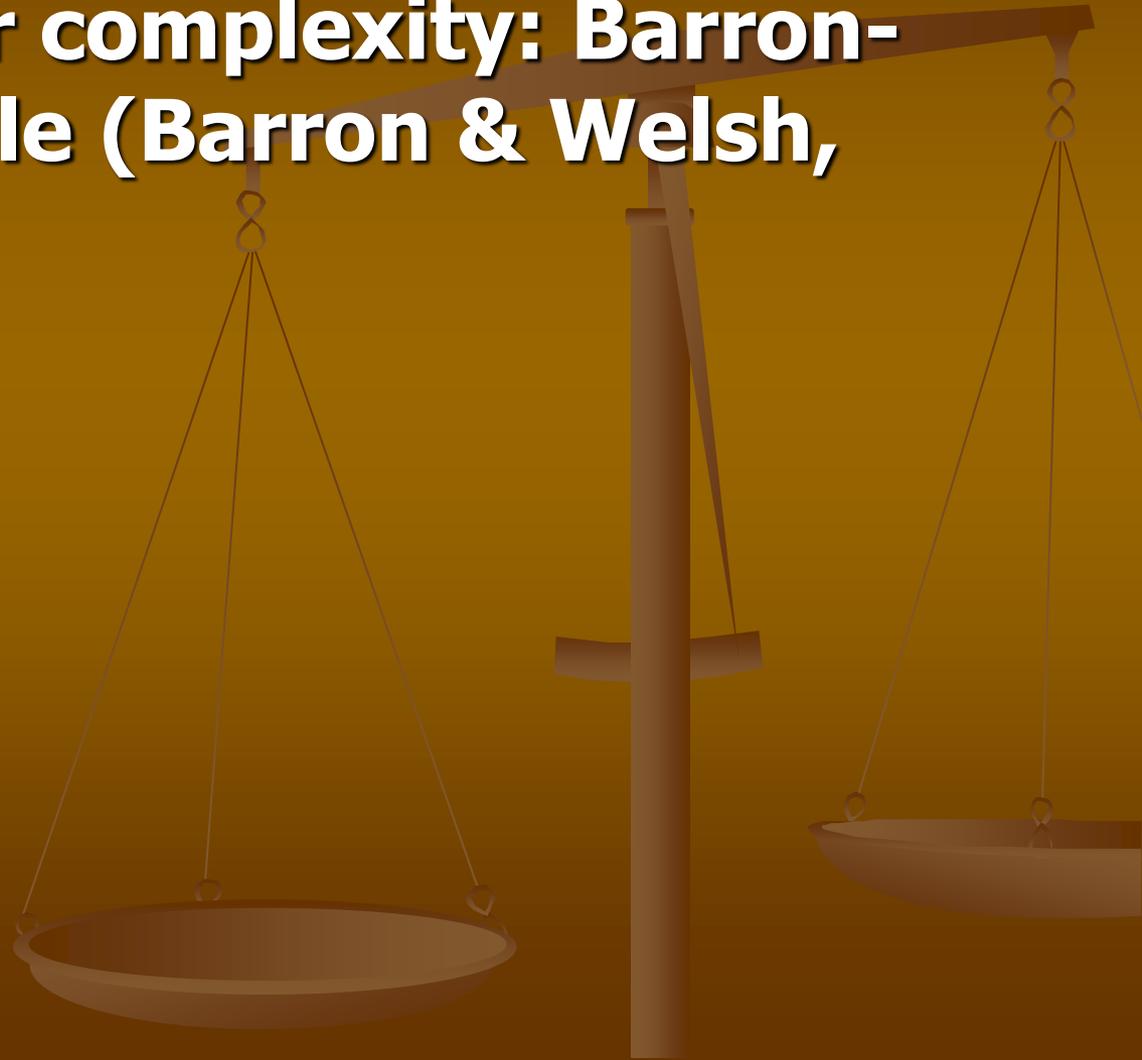
- **Verbal measurement**
  - **Remote associates (Mednick, 1962)**
  - **Word associations (Getzels & Jackson, 1962)**
  - **Fable endings (Getzels & Jackson, 1962)**
  - **Consequences (Guilford, 1954)**

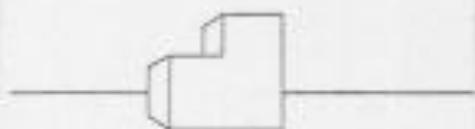
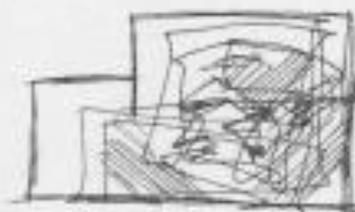
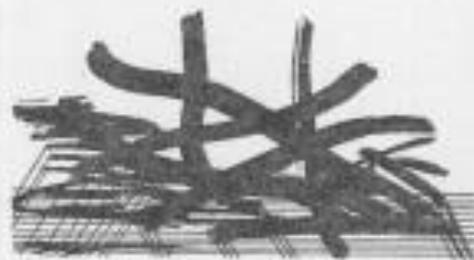
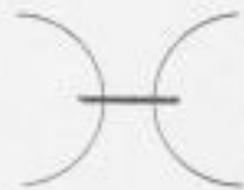
**Imagine all of the things that might possibly happen if all national and local laws were suddenly abolished.**



# *Little-c creativity measurement: person oriented*

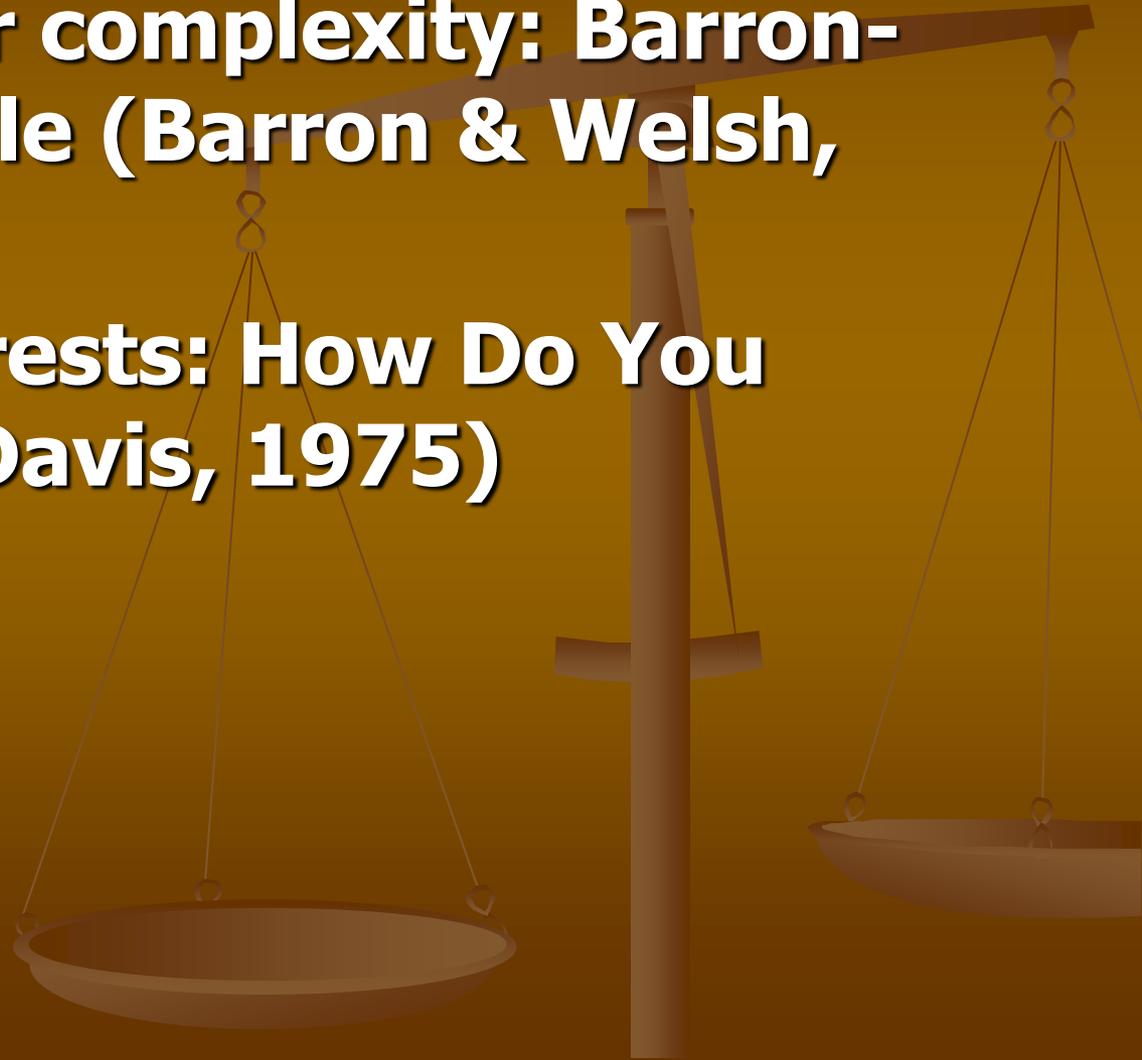
- **Preference for complexity: Barron-Welsh Art Scale (Barron & Welsh, 1952)**





# *Little-c creativity measurement: person oriented*

- **Preference for complexity: Barron-Welsh Art Scale (Barron & Welsh, 1952)**
- **Values & interests: How Do You Think Scale (Davis, 1975)**



## **I. ENERGETIC ORIGINALITY (26 ITEMS)**

- Originality*
- 24. I am often inventive or ingenious.
  - 57. I am quite original and imaginative.
  - 74. I like trying new ideas and new approaches to problems.
- Energy*
- 53. I am a very active, energetic person.
  - 76. I often become totally engrossed in a new idea.
  - 83. The word "quick" describes me.
- Curiosity*
- 55. I am very curious.
  - 102. I have taken things apart just to find out how they work.

## II. CREATIVE INTERESTS AND ACTIVITIES (14 ITEMS)

- |   |     |   |
|---|-----|---|
| <i>Artistic and<br/>Aesthetic<br/>Interests</i> | 49. | I have always been active in drawing or painting.                         |
|   | 81. | I am very conscious of aesthetic considerations.                          |
|   | 95. | I often attend concerts.  |
| <i>Reflectiveness</i>                           | 60. | I am very idealistic.   |
|   | 68. | I am very "reflective."   |
|   | 94. | I often reflect on my personal values.                                    |
| <i>Hobbies</i>                                  | 8.  | When I was young I was always building or making things.                  |
|   | 58. | I have had many hobbies.  |
| <i>Creative<br/>Parents</i>                     | 16. | My parents participated in, or were highly interested in, art or writing. |
|   | 17. | My parents were always in some form of hobbies or handicrafts.            |
|   | 96. | My parents visit art galleries and museums.                               |

### **III. CREATIVE WRITING, ATTRACTION TO COMPLEX (7 ITEMS)**

*Creative  
Writing*

- 15. I have done a lot of creative writing.
- 84. I try to use metaphors and analogies in my writing.

*Complexity*

- 1. I enjoy the confusion of a big city.
- 11. I have a great many interests.
- 62. I enjoy some amount of ambiguity in my life.

#### **IV. SELF-CONFIDENCE AND SENSE OF HUMOR (13 ITEMS)**

- |  |  |
|--|--|
| <i>Independence<br/>and Self-<br/>Confidence</i> | 4. I am very independent.                            |
|  | 23. I worry about being considered foolish.*         |
|  | 43. I would rate myself high in self-<br>confidence. |
| <i>Humor</i>                                     | 48. I have a great sense of humor.                   |
|  | 75. I am witty.                                      |

## **V. FREEDOM AND FLEXIBILITY, BELIEF IN PSYCHICAL PHENOMENA (15 ITEMS)**

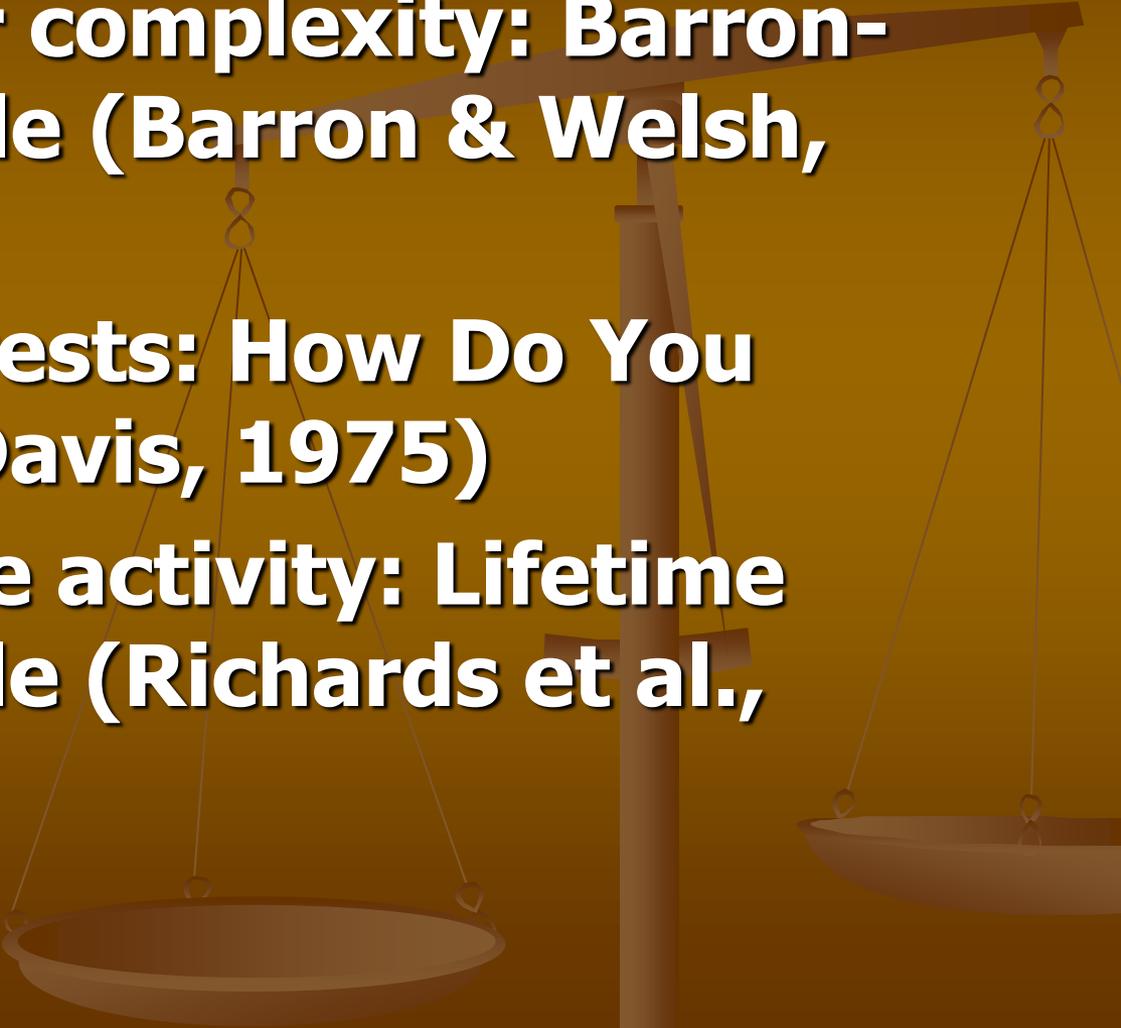
- Free and Flexible*
- 5. I am very likely to do things on impulse.
  - 14. I prefer to pre-plan and schedule vacations carefully.\*
  - 20. I am neat and well-ordered.\*
- Belief in Psychological Phenomena*
- 32. Psychics are able to predict such things as national disasters, election results, political assassinations, etc.
  - 35. Flying saucers are visitors from outer space.

## **VI. AROUSAL SEEKING, RISK-TAKING, AND PLAYFULNESS (27 ITEMS)**

- Stimulation*
- 9. I would like to learn mountain-climbing.
  - 51. I would like to get a pilot's license.
  - 70. I avoid activities which are a little frightening.\*
- Risk-Taking*
- 27. I am a risk-taker.
  - 72. I would take a college course which 50 percent flunk.
- Playfulness*
- 2. I often think like a child.
  - 56. I tend to become childishly involved with simple things.
  - 66. I like to play tag, hopscotch, etc., with the kids.
- 

\* Low score indicates creativity.

# *Little-c creativity measurement: person oriented*

- **Preference for complexity: Barron-Welsh Art Scale (Barron & Welsh, 1952)**
  - **Values & interests: How Do You Think Scale (Davis, 1975)**
  - **Actual creative activity: Lifetime Creativity Scale (Richards et al., 1988)**
- 

**Table 1**  
*Definitions of Levels of Two Types of Creativity Scales*

Rating	Level	Definition
<b>Levels for peak creativity</b>		
(0)	No significant	Routine or prescribed endeavors with negligible innovative aspects.
(1)	Minor	Small unexceptional departures from routine or prescribed endeavor.
(2)	Some	Greater innovativeness, but not unusual in the population.
(3)	Moderate	Central innovative elements that stand out in the population, although not markedly; these may involve major modifications of common practices or products.
(4)	High	Presence of markedly distinctive innovative elements that set endeavors well apart from others in the population.
(5)	Exceptional	Radical departures from the commonplace; these may require conceptual reorganization to be assimilated.
<b>Levels for extent of creative involvement</b>		
(0)	No significant	Highly prescribed or routine lifetime activity.
(1)	Minor	Prescribed or routine patterns, broken by brief, rare instances of innovative activity.
(2)	Some	Greater extent of innovative activity, but not unusual in the population, and other activity tends to predominate.
(3)	Moderate	Notable innovative activity in a pattern that tends to admix this with other forms of endeavor.
(4)	High	Markedly distinctive emphasis on innovation—a dominant life theme and primary commitment.
(5)	Exceptional	Pervasive, and perhaps compulsive, preoccupation with innovative activity to the virtual exclusion of other emphases.

Table 2

*Abbreviated Examples of Subjects at Three Creativity Rating Levels*

Level	Example 1	Example 2
	Vocational history	
No significant peak creativity	Mixed and carried mortar for local brick layer for 20 years, then inherited a large income-paying trust fund and retired to a passive life on a country estate.	Washed store windows for 3 years under foreman's supervision, spent 5 years on assembly lines in two factories and, for the past 11 years, has done routine quality-control tasks in a brewery.
Some peak creativity	Longtime owner and manager of a small dairy farm who, after 10 years of producing cheese and other dairy products, expanded and began marketing through a local distributor.	Optician who spent 4 years selling optical items, then acquired a small optical shop, and now grinds lenses to prescription while managing the retailing of standard optical products.
High peak creativity	Former avant garde dancer and choreographer who developed and directed a variety of unusual productions for several dance companies, but postwar, has worked solely as a hotel clerk.	Entrepreneur who advanced from apprentice to independent researcher of new products before starting a major paint manufacturing company, and whose operation surreptitiously manufactured and smuggled explosives for the Danish Resistance during World War II.
	Avocational history	
No significant peak creativity	Once read movie magazines intensively, but now spends most evenings with the new family television. Also does much needlepoint following specified patterns and, on weekends, watches spouse play handball.	Often reads in spare time, has a standing subscription to the local theatre, belongs to a health club, has been going daily for directed group calisthenics, attends a social club to watch weekly televised sporting events with friends, and occasionally attends local soccer games.
Some peak creativity	Active church member who has ushered at church services for over 20 years, has sung for the last 10 years in the alto section of the church choir and who, recently, has been volunteering on a committee designed to expand parish membership.	Avid reader and sports enthusiast who previously completed a night school journalism course and now gives brief accounts of sporting events for a monthly community newspaper. On weekends, also volunteers as an assistant coach for a children's swim team.
High peak creativity	Amateur archaeologist who for years has spent summers and other free time seeking new sites, initiating archaeological digs with professionals from a nearby university, researching artifacts, reconstructing aspects of primitive societies, and collaborating in articles on this work.	Invests much spare time in working with own handicapped child and once, over several years, designed and constructed a complex apparatus to help this child with locomotion, gross changes of posture, and fine motor manipulation of objects. Now works as a volunteer teacher twice a week to help other handicapped children use this invention.

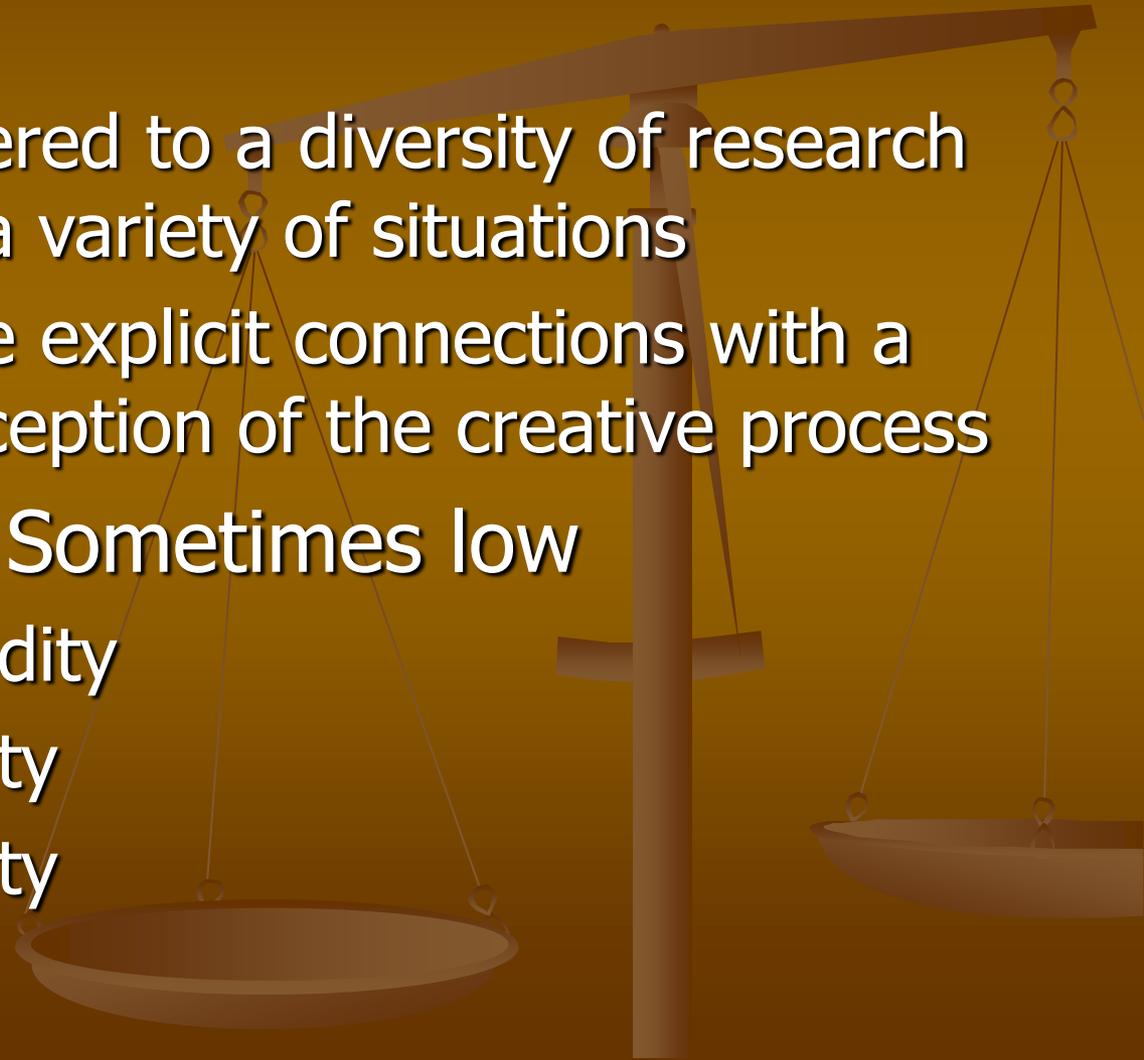
# *Little-c creativity measurement: Evaluation*

## ■ Advantages

- Easily administered to a diversity of research participants in a variety of situations
- Frequently have explicit connections with a theoretical conception of the creative process

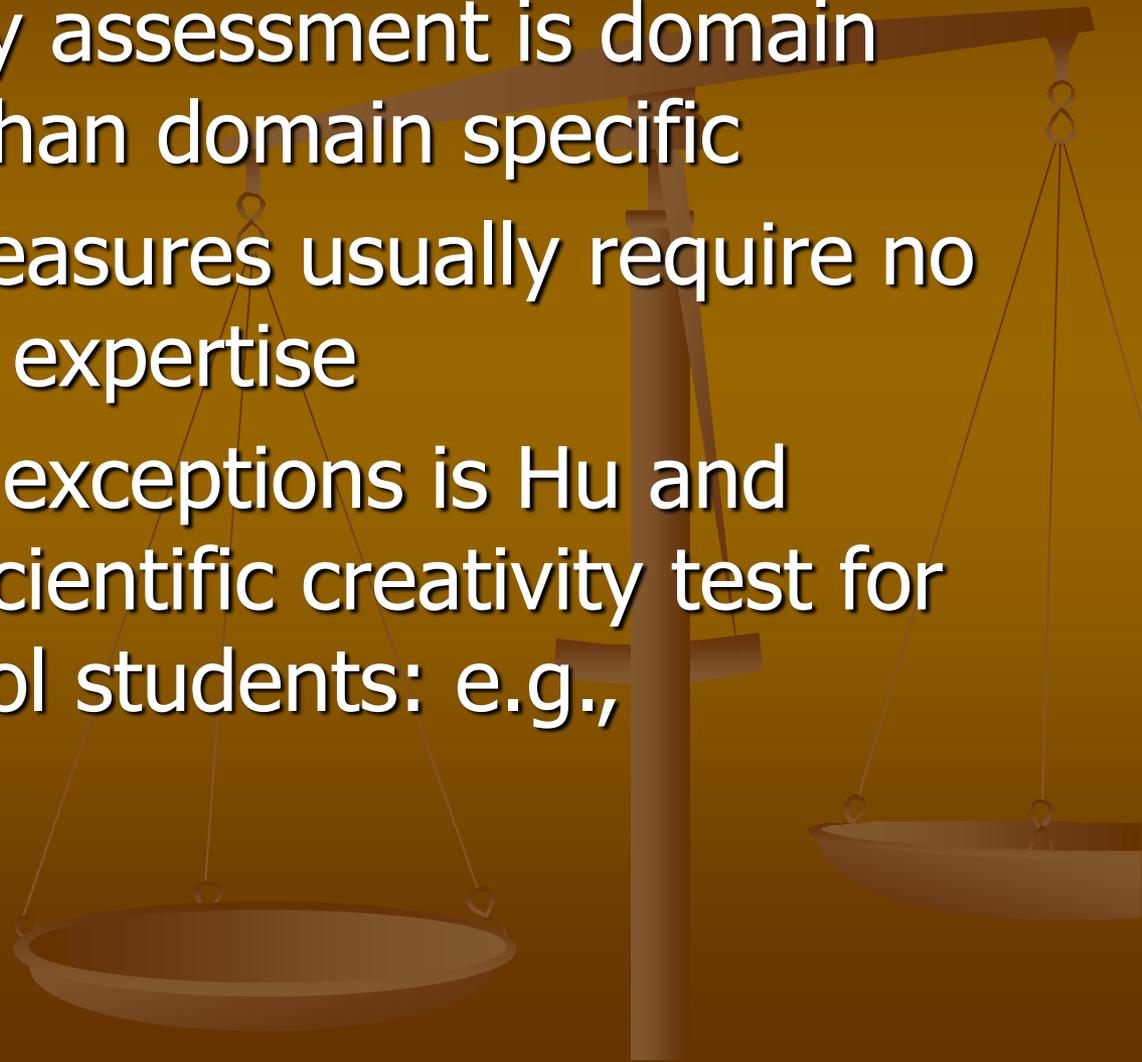
## ■ Disadvantages: Sometimes low

- Convergent validity
- Divergent validity
- Predictive validity



# The Fundamental Issue

- Little-c creativity assessment is domain general rather than domain specific
- That is, such measures usually require no domain-specific expertise
- Among the few exceptions is Hu and Adey's (2002) scientific creativity test for secondary school students: e.g.,

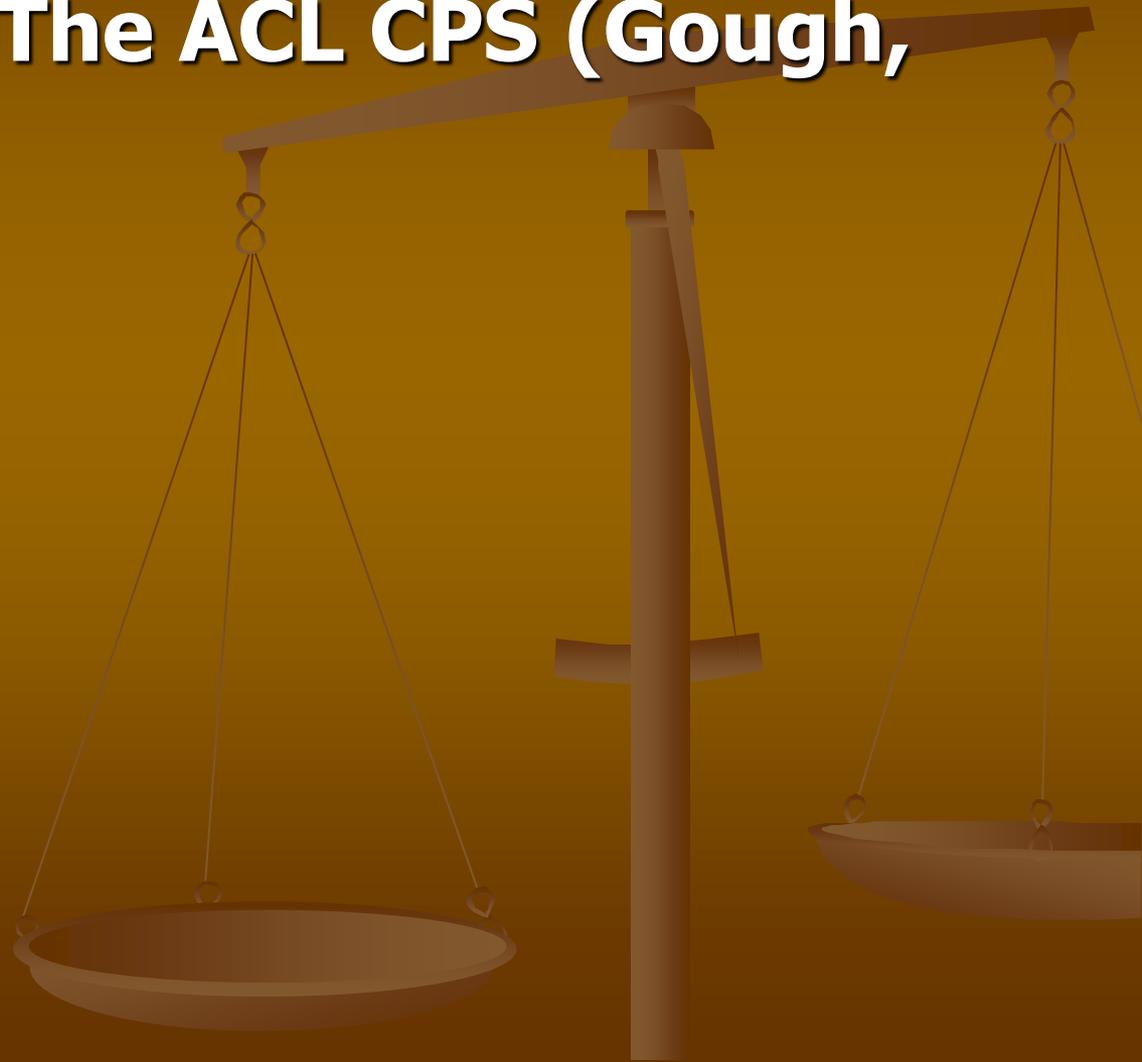


*Item 4*

Suppose there was no gravity, describe what the world would be like?  
*For example, human beings would be floating.*

# Medium-C CREATIVITY – TRANSITIONAL LEVEL

- **Self-concept: The ACL CPS (Gough, 1979)**



- absent-minded  
1
- active  
2
- adaptable  
3
- adventurous  
4
- affected  
5
- affectionate  
6
- aggressive  
7
- alert  
8
- aloof  
9
- ambitious  
10
- anxious  
11
- apathetic  
12
- appreciative  
13
- argumentative  
14
- arrogant  
15

- cheerful  
31
- civilized  
32
- clear-thinking  
33
- clever  
34
- coarse  
35
- cold  
36
- commonplace  
37
- complaining  
38
- complicated  
39
- conceited  
40
- confident  
41
- confused  
42
- conscientious  
43
- conservative  
44
- considerate  
45

- dependent  
61
- despondent  
62
- determined  
63
- dignified  
64
- discreet  
65
- disorderly  
66
- dissatisfied  
67
- distractible  
68
- distrustful  
69
- dominant  
70
- dreamy  
71
- dull  
72
- easy going  
73
- effeminate  
74
- efficient  
75

- foresighted  
91
- forgetful  
92
- forgiving  
93
- formal  
94
- frank  
95
- friendly  
96
- frivolous  
97
- fussy  
98
- generous  
99
- gentle  
100
- gloomy  
101
- good-looking  
102
- good-natured  
103
- greedy  
104
- handsome  
105

- impulsive  
121
- independent  
122
- indifferent  
123
- individualistic  
124
- industrious  
125
- infantile  
126
- informal  
127
- ingenious  
128
- inhibited  
129
- initiative  
130
- insightful  
131
- intelligent  
132
- interests narrow  
133
- interests wide  
134
- intolerant  
135

- artistic  
16
- assertive  
17
- attractive  
18
- autocratic  
19
- awkward  
20
- bitter  
21
- blustery  
22
- boastful  
23
- bossy  
24
- calm  
25
- capable  
26
- careless  
27
- cautious  
28
- changeable  
29
- charming  
30

- contented  
46
- conventional  
47
- cool  
48
- cooperative  
49
- courageous  
50
- cowardly  
51
- cruel  
52
- curious  
53
- cynical  
54
- daring  
55
- deceitful  
56
- defensive  
57
- deliberate  
58
- demanding  
59
- dependable  
60

- egotistical  
76
- emotional  
77
- energetic  
78
- enterprising  
79
- enthusiastic  
80
- evasive  
81
- excitable  
82
- fair-minded  
83
- fault-finding  
84
- fearful  
85
- feminine  
86
- fickle  
87
- flirtatious  
88
- foolish  
89
- forceful  
90

- hard-headed  
106
- hard-hearted  
107
- hasty  
108
- headstrong  
109
- healthy  
110
- helpful  
111
- high-strung  
112
- honest  
113
- hostile  
114
- humorous  
115
- hurried  
116
- idealistic  
117
- imaginative  
118
- immature  
119
- impatient  
120

- inventive  
136
- irresponsible  
137
- irritable  
138
- jolly  
139
- kind  
140
- lazy  
141
- leisurely  
142
- logical  
143
- loud  
144
- loyal  
145
- mannerly  
146
- masculine  
147
- mature  
148
- meek  
149
- methodical  
150

- |   |   |   |   |   |
|---|---|---|---|---|
| <input type="checkbox"/> mild<br>151          | <input type="checkbox"/> practical<br>181     | <input type="checkbox"/> sarcastic<br>211                 | <input type="checkbox"/> sophisticated<br>241         | <input type="checkbox"/> tough<br>271                     |
| <input type="checkbox"/> mischievous<br>152   | <input type="checkbox"/> praising<br>182      | <input type="checkbox"/> self-centered<br>212             | <input type="checkbox"/> spendthrift<br>242           | <input type="checkbox"/> trusting<br>272                  |
| <input type="checkbox"/> moderate<br>153      | <input type="checkbox"/> precise<br>183       | <input checked="" type="checkbox"/> self-confident<br>213 | <input type="checkbox"/> spineless<br>243             | <input type="checkbox"/> unaffected<br>273                |
| <input type="checkbox"/> modest<br>154        | <input type="checkbox"/> prejudiced<br>184    | <input type="checkbox"/> self-controlled<br>214           | <input type="checkbox"/> spontaneous<br>244           | <input type="checkbox"/> unambitious<br>274               |
| <input type="checkbox"/> moody<br>155         | <input type="checkbox"/> preoccupied<br>185   | <input type="checkbox"/> self-denying<br>215              | <input type="checkbox"/> spunky<br>245                | <input type="checkbox"/> unassuming<br>275                |
| <input type="checkbox"/> nagging<br>156       | <input type="checkbox"/> progressive<br>186   | <input type="checkbox"/> self-pitying<br>216              | <input type="checkbox"/> stable<br>246                | <input checked="" type="checkbox"/> unconventional<br>276 |
| <input type="checkbox"/> natural<br>157       | <input type="checkbox"/> prudish<br>187       | <input type="checkbox"/> self-punishing<br>217            | <input type="checkbox"/> steady<br>247                | <input type="checkbox"/> undependable<br>277              |
| <input type="checkbox"/> nervous<br>158       | <input type="checkbox"/> quarrelsome<br>188   | <input type="checkbox"/> self-seeking<br>218              | <input type="checkbox"/> stern<br>248                 | <input type="checkbox"/> understanding<br>278             |
| <input type="checkbox"/> noisy<br>159         | <input type="checkbox"/> queer<br>189         | <input type="checkbox"/> selfish<br>219                   | <input type="checkbox"/> stingy<br>249                | <input type="checkbox"/> unemotional<br>279               |
| <input type="checkbox"/> obliging<br>160      | <input type="checkbox"/> quick<br>190         | <input type="checkbox"/> sensitive<br>220                 | <input type="checkbox"/> stolid<br>250                | <input type="checkbox"/> unexcitable<br>280               |
| <input type="checkbox"/> obnoxious<br>161     | <input type="checkbox"/> quiet<br>191         | <input type="checkbox"/> sentimental<br>221               | <input type="checkbox"/> strong<br>251                | <input type="checkbox"/> unfriendly<br>281                |
| <input type="checkbox"/> opinionated<br>162   | <input type="checkbox"/> quitting<br>192      | <input type="checkbox"/> serious<br>222                   | <input type="checkbox"/> stubborn<br>252              | <input type="checkbox"/> uninhibited<br>282               |
| <input type="checkbox"/> opportunistic<br>163 | <input type="checkbox"/> rational<br>193      | <input type="checkbox"/> severe<br>223                    | <input checked="" type="checkbox"/> submissive<br>253 | <input type="checkbox"/> unintelligent<br>283             |
| <input type="checkbox"/> optimistic<br>164    | <input type="checkbox"/> rattlebrained<br>194 | <input checked="" type="checkbox"/> sexy<br>224           | <input type="checkbox"/> suggestible<br>254           | <input type="checkbox"/> unkind<br>284                    |
| <input type="checkbox"/> organized<br>165     | <input type="checkbox"/> realistic<br>195     | <input type="checkbox"/> shallow<br>225                   | <input type="checkbox"/> sulky<br>255                 | <input type="checkbox"/> unrealistic<br>285               |

- |   |  |   |   |  |
|---|--|---|---|--|
| <input checked="" type="checkbox"/> original<br>166 | <input type="checkbox"/> reasonable<br>196             | <input type="checkbox"/> sharp-witted<br>226        | <input type="checkbox"/> superstitious<br>256 | <input type="checkbox"/> unscrupulous<br>286 |
| <input type="checkbox"/> outgoing<br>167            | <input type="checkbox"/> rebellious<br>197             | <input type="checkbox"/> shiftless<br>227           | <input type="checkbox"/> suspicious<br>257    | <input type="checkbox"/> unselfish<br>287    |
| <input type="checkbox"/> outspoken<br>168           | <input type="checkbox"/> reckless<br>198               | <input type="checkbox"/> show-off<br>228            | <input type="checkbox"/> sympathetic<br>258   | <input type="checkbox"/> unstable<br>288     |
| <input type="checkbox"/> painstaking<br>169         | <input checked="" type="checkbox"/> reflective<br>199  | <input type="checkbox"/> shrewd<br>229              | <input type="checkbox"/> tactful<br>259       | <input type="checkbox"/> vindictive<br>289   |
| <input type="checkbox"/> patient<br>170             | <input type="checkbox"/> relaxed<br>200                | <input type="checkbox"/> shy<br>230                 | <input type="checkbox"/> tactless<br>260      | <input type="checkbox"/> versatile<br>290    |
| <input type="checkbox"/> peaceable<br>171           | <input type="checkbox"/> reliable<br>201               | <input type="checkbox"/> silent<br>231              | <input type="checkbox"/> talkative<br>261     | <input type="checkbox"/> warm<br>291         |
| <input type="checkbox"/> peculiar<br>172            | <input type="checkbox"/> resentful<br>202              | <input type="checkbox"/> simple<br>232              | <input type="checkbox"/> temperamental<br>262 | <input type="checkbox"/> wary<br>292         |
| <input type="checkbox"/> persevering<br>173         | <input type="checkbox"/> reserved<br>203               | <input type="checkbox"/> sincere<br>233             | <input type="checkbox"/> tense<br>263         | <input type="checkbox"/> weak<br>293         |
| <input type="checkbox"/> persistent<br>174          | <input checked="" type="checkbox"/> resourceful<br>204 | <input type="checkbox"/> slipshod<br>234            | <input type="checkbox"/> thankless<br>264     | <input type="checkbox"/> whiny<br>294        |
| <input type="checkbox"/> pessimistic<br>175         | <input type="checkbox"/> responsible<br>205            | <input type="checkbox"/> slow<br>235                | <input type="checkbox"/> thorough<br>265      | <input type="checkbox"/> wholesome<br>295    |
| <input type="checkbox"/> planful<br>176             | <input type="checkbox"/> restless<br>206               | <input type="checkbox"/> sly<br>236                 | <input type="checkbox"/> thoughtful<br>266    | <input type="checkbox"/> wise<br>296         |
| <input type="checkbox"/> pleasant<br>177            | <input type="checkbox"/> retiring<br>207               | <input type="checkbox"/> smug<br>237                | <input type="checkbox"/> thrifty<br>267       | <input type="checkbox"/> withdrawn<br>297    |
| <input type="checkbox"/> pleasure-seeking<br>178    | <input type="checkbox"/> rigid<br>208                  | <input checked="" type="checkbox"/> snobbish<br>238 | <input type="checkbox"/> timid<br>268         | <input type="checkbox"/> witty<br>298        |
| <input type="checkbox"/> poised<br>179              | <input type="checkbox"/> robust<br>209                 | <input type="checkbox"/> sociable<br>239            | <input type="checkbox"/> tolerant<br>269      | <input type="checkbox"/> worrying<br>299     |
| <input type="checkbox"/> polished<br>180            | <input type="checkbox"/> rude<br>210                   | <input type="checkbox"/> soft-hearted<br>240        | <input type="checkbox"/> touchy<br>270        | <input type="checkbox"/> zany<br>300         |

**TABLE VI.2 *Adjectives Checked as Self-Descriptive by 80% or More of One Sample but by Less Than 80% of Another***

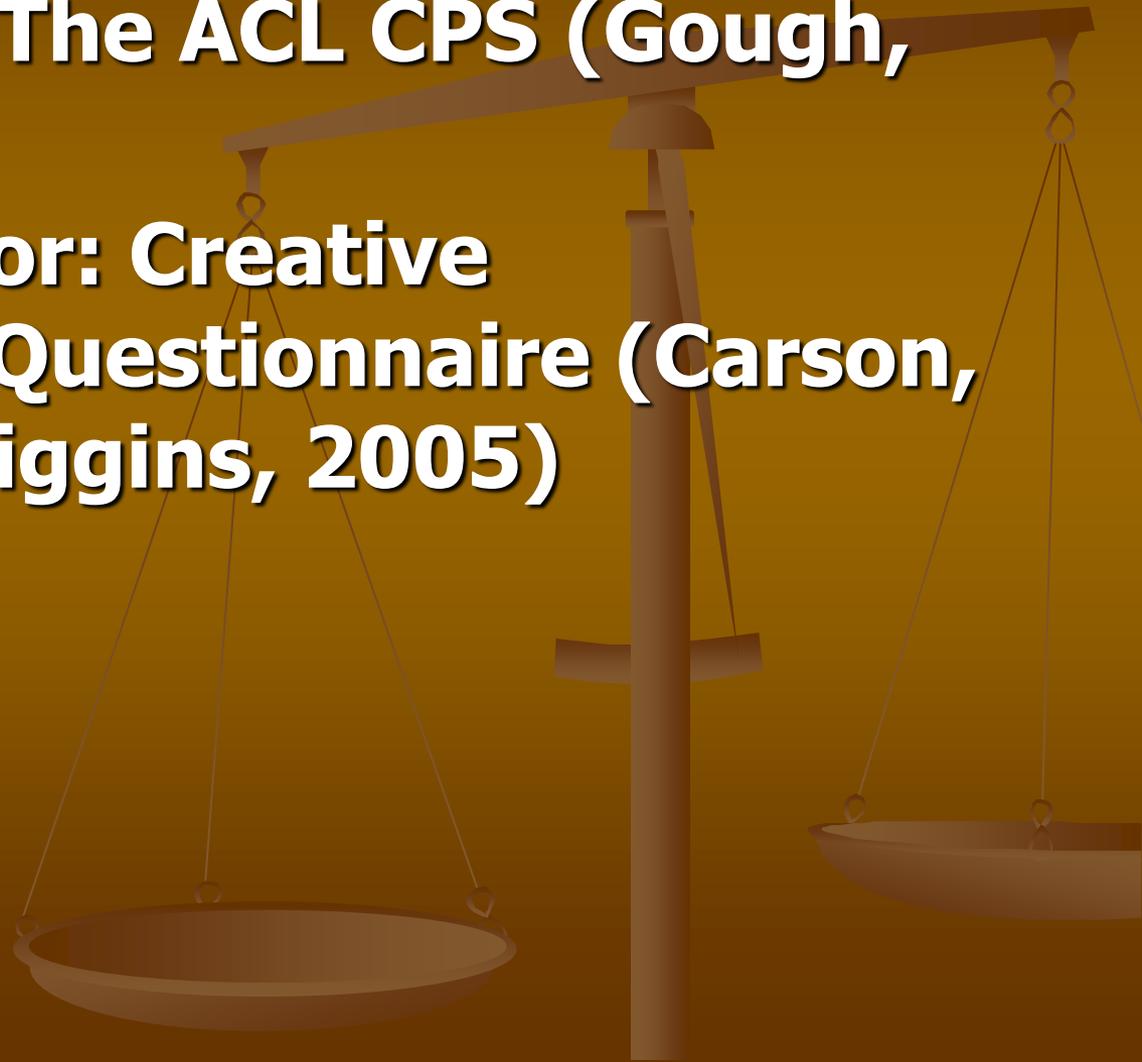
Checked by $\geq 80\%$ of I, but $< 80\%$ of III	Checked by $\geq 80\%$ of I, but $< 80\%$ of II	Checked by $\geq 80\%$ of II, but $< 80\%$ of I	Checked by $\geq 80\%$ of III, but $< 80\%$ of I
*inventive	*inventive	† responsible	† responsible
*determined	*determined	† sincere	† sincere
*independent	*independent	† reliable	† reliable
*individualistic	*individualistic	† dependable	† dependable
*enthusiastic	*enthusiastic	† clear-thinking	† clear-thinking
*industrious	*industrious	† tolerant	† tolerant
artistic	adaptable	† understanding	† understanding
progressive	interests wide	forgiving	peaceable
appreciative		kind	good-natured
		sensitive	moderate
		rational	steady
		alert	practical
			logical

\*Checked by  $\geq 80\%$  of I, but  $< 80\%$  of II and III

†Checked by  $\geq 80\%$  of II and III, but  $< 80\%$  of I

# Medium-C CREATIVITY – TRANSITIONAL LEVEL

- **Self-concept: The ACL CPS (Gough, 1979)**
- **Actual behavior: Creative Achievement Questionnaire (Carson, Peterson, & Higgins, 2005)**



**Creative Achievement Questionnaire**  
**Shelley Carson**  
**Harvard University**

*I. Place a check mark beside the areas in which you feel you have more talent, ability, or training than the average person.*

- visual arts (painting, sculpture)
- music
- dance
- individual sports (tennis, golf)
- team sports
- architectural design
- entrepreneurial ventures
- creative writing
- humor
- inventions
- scientific inquiry
- theater and film
- culinary arts

II. *Place a check mark beside sentences that apply to you. Next to sentences with an asterisk (\*), write the number of times this sentence applies to you.*

A. Visual Arts (painting, sculpture)

- 0. I have no training or recognized talent in this area. (Skip to Music).
- 1. I have taken lessons in this area.
- 2. People have commented on my talent in this area.
- 3. I have won a prize or prizes at a juried art show.
- 4. I have had a showing of my work in a gallery.
- 5. I have sold a piece of my work.
- 6. My work has been critiqued in local publications.
- \*  7. My work has been critiqued in national publications.

## H. Scientific Discovery

- 0. I do not have training or recognized ability in this field (Skip to Theater
- 1. I often think about ways that scientific problems could be solved.
- 2. I have won a prize at a science fair or other local competition.
- 3. I have received a scholarship based on my work in science or medicine.
- 4. I have been author or coauthor of a study published in a scientific journal.
- \*  5. I have won a national prize in the field of science or medicine.
- \*  6. I have received a grant to pursue my work in science or medicine.
- 7. My work has been cited by other scientists in national publications.

## I. Theater and Film

- 0. I do not have training or recognized ability in this field.
- 1. I have performed in theater or film.
- 2. My acting abilities have been recognized in a local publication.
- 3. I have directed or produced a theater or film production.
- 4. I have won an award or prize for acting in theater or film.
- 5. I have been paid to act in theater or film.
- 6. I have been paid to direct a theater or film production.
- \*  7. My theatrical work has been recognized in a national publication.

## Scoring of the Creative Achievement Questionnaire

- 1 Each checkmarked item receives the number of points represented by the question number adjacent to the checkmark.
- 2 If an item is marked by an asterisk, multiply the number of times the item has been achieved by the number of the question to determine points for that item.
- 3 Sum the total number of points within each domain to determine the domain score.
- 4 Sum all ten domain scores to determine the total CAQ score.

**Table 3.** *Correlations of the CAQ With Other Creativity Measures*

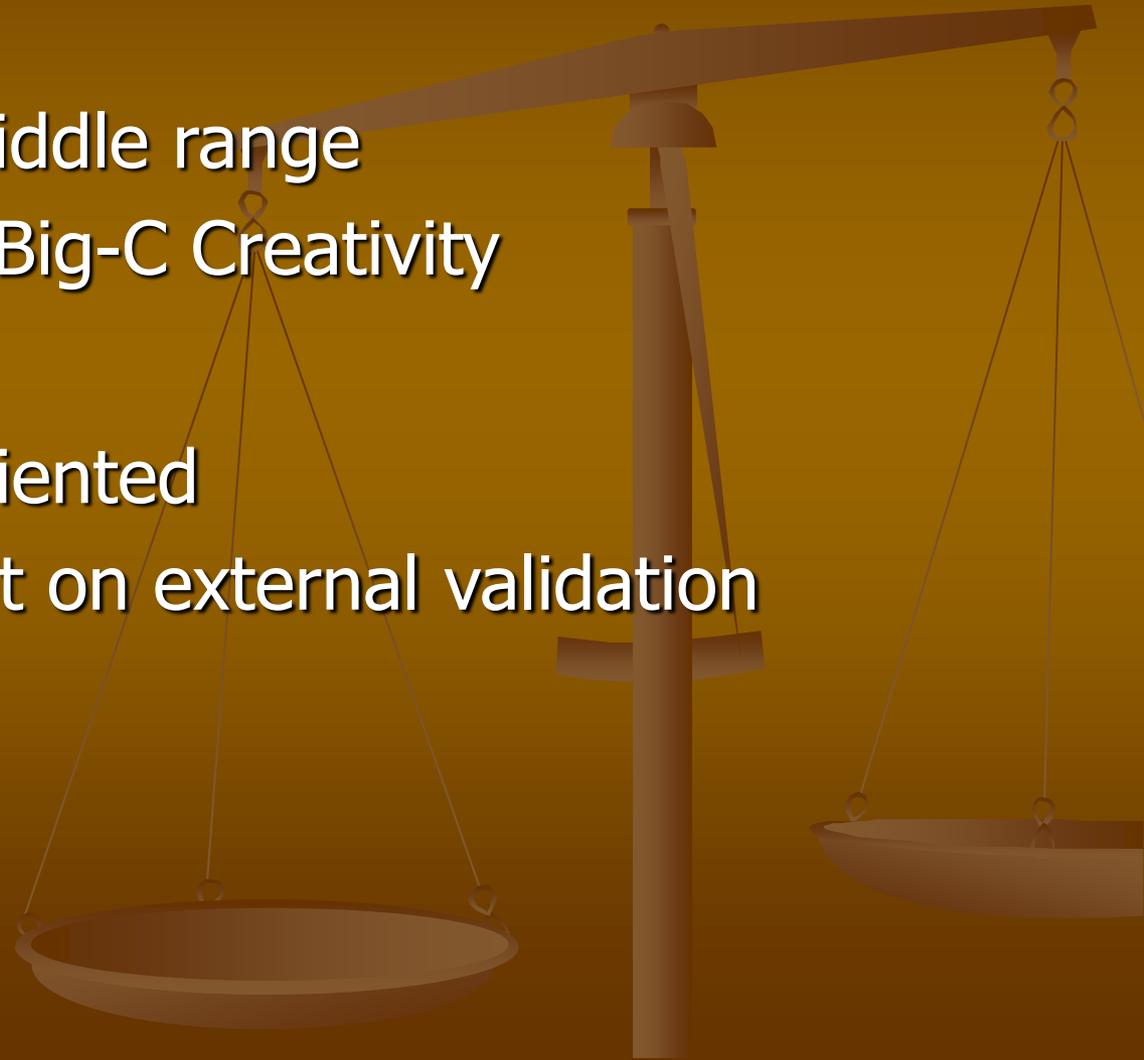
	CPS	Openness	Intellect	Diverg	Fluency	Orig	Flexibility
Openness	.42***						
Intellect	.51***	.37**					
Diverg	.29*	.34*	.39***				
Fluency	.10	.20	.31**	.86***			
Orig	.32**	.30**	.36**	.86***	.59***		
Flexibility	.34**	.37**	.35**	.87***	.62***	.63***	
CAQ	.33**	.33**	.51***	.47***	.38***	.46***	.37***

*Note.* CPS = Creative Personality Scale, Diverg = Total Divergent Thinking Score, Orig = Originality.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

# Medium-C CREATIVITY: Evaluation

- Advantage
  - Designed for middle range
  - Links little-c to Big-C Creativity
- Disadvantage
  - Less process oriented
  - More contingent on external validation



# Big-C Creativity Measurement

- Expert surveys (e.g., Farnsworth, 1969)



Table 3.2 *All-time Eminence Rankings of Classical Composers*

1. J. S. Bach	26. Machaut	50.5 Fauré	77. Praetorius
2. Beethoven	27. Sc'hütz	52. Dowland	77. Borodin
3. Mozart	28. Liszt	53. C. P. E. Bach	77. Gounod
4. J. Haydn	29. Mussorsky	54. Rimsky-Korsakov	79. M. Haydn
5. Brahms	30. Corelli	55. Perotinus	80.5 Sousa
6. Handel	31. D. Scarlatti	56. Wolf	80.5 Sullivan
7. Debussy	32. Gabrielli	57. Bartók	82.5 Bellini
8. Schubert	33. Couperin	58. Grieg	82.5 Janáček
9. Wagner	34. Gluck	59. Weber	85. Donizetti
10. Chopin	35. Puccini	60. Gibbons	85. Webern
11. Monteverdi	36. Franck	61. Sweelinck	85. Willaert
12. Palestrina	37. Dvořák	62. Schoenberg	87. Offenbach
13. Verdi	38. Buxtehude	63. J. Strauss, Jr.	88.5 Ravel
14. Schumann	39. Bruckner	64. Saint-Saëns	88.5 Delius
15. des Pres	40. Sibelius	65.5 Telemann	91. Elgar
16. de Lassus	41. Rameau	65.5 Lulli	91. Hindemith
17.5 Purcell	42. Frescobaldi	67. Landino	91. Satie
17.5 Berlioz	43. Okeghem	68. MacDowell	93.5 Cherubini
19. R. Strauss	44. Stravinsky	69. J. C. Bach	93.5 Foster
20. Mendelssohn	45. A. Scarlatti	70. Leoninus	95. de Rore
21. Tchaikovsky	46. Dunstable	71. A. Gabrieli	96.5 Boccherini
22. Vivaldi	47. Bizet	72.5 Carissimi	96.5 Franco of Cologne
23. Mahler	48. Gesualdo	72.5 Pergolesi	98.5 Clementi
24. Byrd	49. Rossini	74. Marenzio	98.5 Tartini
25. Dufay	50.5 de Victoria	75. Smetana	(The next 4 are tied)

*Note.* Adapted from Farnsworth (1969, 228). Copyright 1966 by Music Educators National Conference. Adapted by permission.

# Big-C Creativity Measurement

- Expert surveys
- Archival sources



# Big-C Creativity Measurement: Archives

- **Examples**

- **Performance frequencies (e.g., Moles, 1958)**

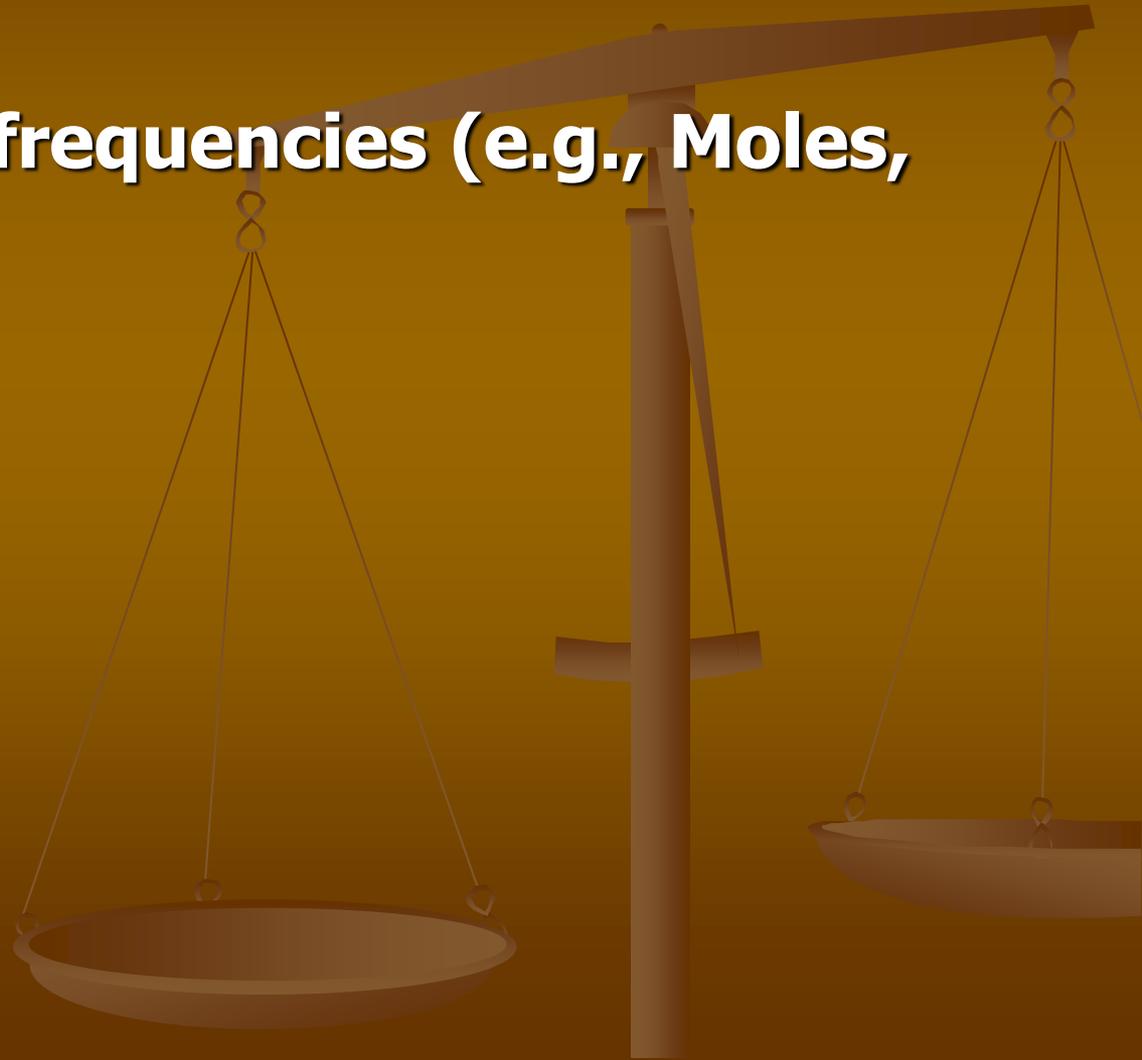


TABLE I: RELATIVE FREQUENCIES OF OCCURRENCE OF  
COMPOSER'S WORKS IN MUSIC PERFORMANCES

No.	Composer	$p_c$	No.	Composer	$p_c$
		<i>per cent</i>			<i>per cent</i>
1	Mozart	6.1	40	Couperin	0.65
2	Beethoven	5.9	41	Mahler	0.6
3	Bach	5.9	42	Rameau	0.6
4	Wagner	4.2	43	St. Saens	0.6
5	Brahms	4.1	44	Massenet	0.6
6	Schubert	3.6	45	Donizetti	0.55
7	Handel	2.8	46	De Falla	0.45
8	Tchaikovsky	2.8	47	Scriabin	0.45
9	Verdi	2.5	48	Meyerbeer	0.45
10	Haydn	2.3	49	Gluck	0.45
11	Schumann	2.1	50	Paganini	0.45
12	Chopin	2.1	51	Milhaud	0.45
13	Liszt	1.75	52	Bartok	0.4
14	Mendelssohn	1.75	53	Borodin	0.4
15	Debussy	1.7	54	Bruckner	0.4
16	Wolf	1.65	55	Vivaldi	0.4
17	Sibelius	1.6	56	Elgar	0.4
18	R. Strauss	1.4	57	Mascagni	0.4
19	Moussorgsky	1.3	58	Offenbach	0.35
20	Dvořak	1.3	59	Palestrina	0.35
21	Stravinsky	1.3	60	Monteverdi	0.35
22	Fauré	1.2	61	Shostakovitch	0.35
23	J. Strauss	1.2	62	Schönberg	0.35
24	Smetana	1.1	63	Walton	0.35
25	Rachmaninoff	1.0	64	Honegger	0.35
26	Purcell	1.0	65	Albéniz	0.3
27	Puccini	1.0	66	Buxtehude	0.3
28	Grieg	0.95	67	Chabrier	0.3
29	Weber	0.95	68	Delius	0.3
30	Prokofiev	0.95	69	Gershwin	0.3
31	Berlioz	0.95	70	Lully	0.3
32	Rossini	0.95	71	Suppe	0.3
33	Ravel	0.95	72	A. Thomas	0.3
34	Rimski-Korsakov	0.85	73	Bloch	0.25
35	D. Scarlatti	0.85	74	Delibes	0.25
36	Franck	0.7	75	Glazounov	0.25
37	Gounod	0.7	76	Glinka	0.25
38	Vaughan Williams	0.7	77	Granados	0.25
39	Bizet	0.65	78	Gretchaninoff	0.25
			79	Khatchaturian	0.25

<b>No.</b>	<b>Composer</b>	<i>P<sub>c</sub></i>
		<i>per cent</i>
1	Mozart	6.1
2	Beethoven	5.9
3	Bach	5.9
4	Wagner	4.2
5	Brahms	4.1
6	Schubert	3.6
7	Handel	2.8
8	Tchaikovsky	2.8
9	Verdi	2.5
10	Haydn	2.3
11	Schumann	2.1
12	Chopin	2.1
13	Liszt	1.75
14	Mendelssohn	1.75
15	Debussy	1.7
16	Wolf	1.65

No.	Composer	$p_c$	No.	Composer	$p_c$
			<i>per cent</i>		
80	Hindemith	0.25	91	J. C. Bach	0.2
81	Lalo	0.25	92	P. E. Bach	0.2
82	Leoncavallo	0.25	93	A. Berg	0.2
83	Josquin des Pres	0.25	94	Bruch	0.2
84	Poulenc	0.25	95	Britten	0.2
85	Orlandus Lassus	0.25	96	Corelli	0.2
86	Boccherini	0.25	97	Busoni	0.2
87	Bellini	0.25	98	Dukas	0.2
88	Telemann	0.2	99	Ponchielli	0.2
89	Pergolesi	0.2	100	Tartini	0.2
90	Enesco	0.2	150	Others (1 work each)	6.0

————— One-half of the musical works performed

..... Three-quarters of the musical works performed

# Big-C Creativity Measurement: Archives

## ■ Examples

- Performance frequencies
- Citation indicators (e.g., Endler, Rushton, & Roediger, 1978)

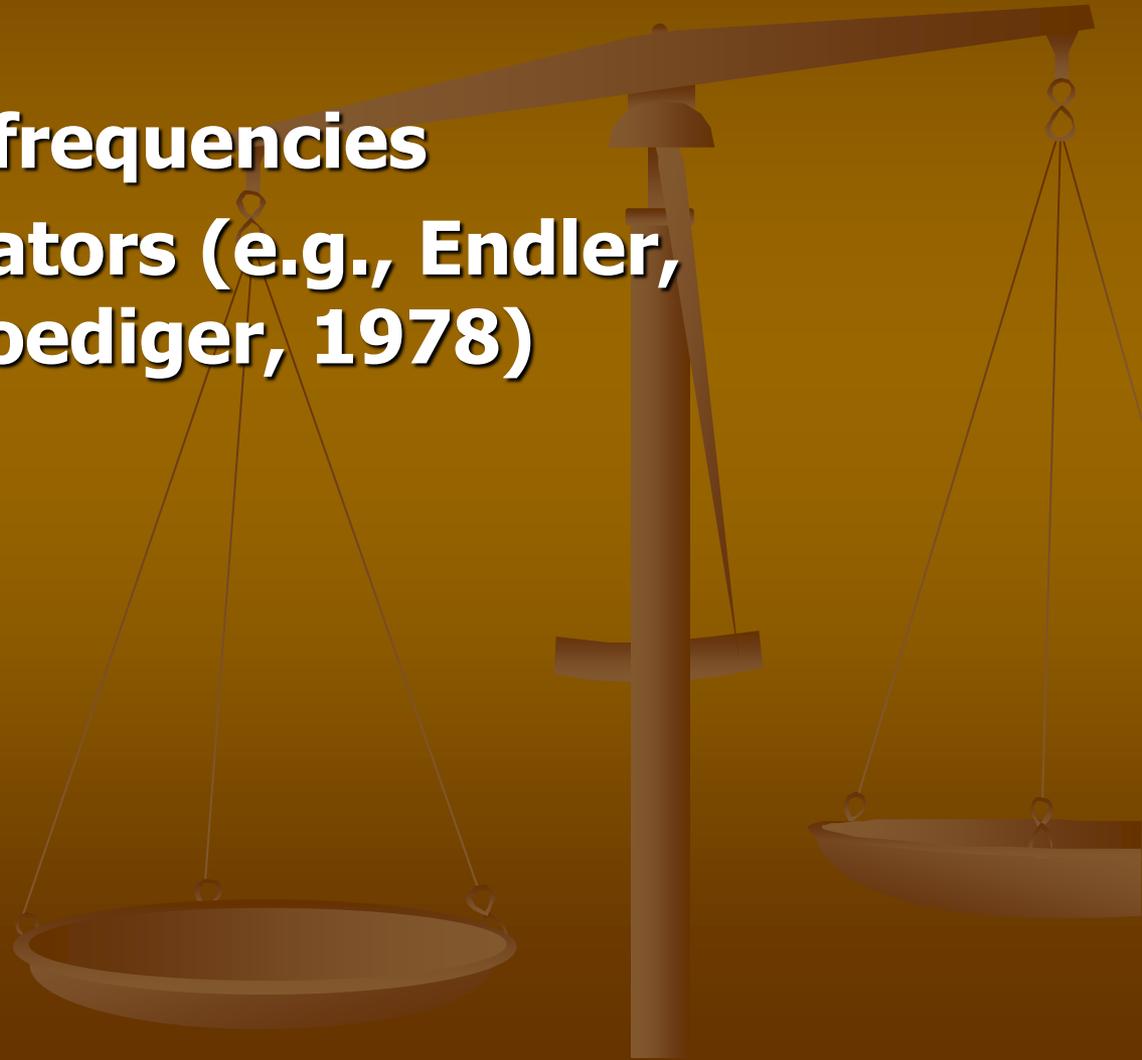


TABLE 2

*The 100<sup>o</sup> Most-Cited Psychologists in the 1975 Social Science Citation Index  
and Their Institutional Affiliations*

Rank	Psychologist	Affiliation	Number citation
1	S. Freud	Deceased	1,426
2	J. Piaget	University of Geneva, Switzerland	1,071
3	B. J. Winer	Purdue University	749
4	A. Bandura	Stanford University	650
5	H. J. Eysenck	University of London, United Kingdom	537
6	D. T. Campbell	Northwestern University	515
7	E. Goffman	University of Pennsylvania	514
8	B. F. Skinner	Harvard University	501
9	E. H. Erikson	Harvard University	494
10	S. Siegel	Deceased (formerly at Pennsylvania State University)	466
11	R. B. Cattell	University of Illinois <sup>b</sup>	428
12	J. P. Guilford	University of Southern California	392
13	C. R. Rogers	Center for Studies of the Person, La Jolla, California	387
14	J. B. Rotter	University of Connecticut	386
15	A. H. Maslow	Deceased (formerly at Brandeis University)	367
16	G. A. Miller	Rockefeller University	365
17	L. J. Cronbach	Stanford University	363
18	J. S. Bruner	Oxford University, United Kingdom	362
19	C. E. Osgood	University of Illinois	356
20	L. Festinger	New School for Social Research	350
21	D. E. Berlyne	Deceased (formerly at the University of Toronto, Canada)	349
22	A. R. Jensen	University of California, Berkeley	338
23	J. Kagan	Harvard University	337
24	S. S. Stevens	Deceased (formerly at Harvard University)	328
25	A. U. Paivio	University of Western Ontario, Canada	315
26	H. A. Witkin	Educational Testing Service, Princeton, New Jersey	314
27	R. Brown	Harvard University	311
28	M. Rokeach	Washington State University	306
29	L. Kohlberg	Harvard University	300
30	M. Rutter	University of London, United Kingdom	296
31	A. Campbell	University of Michigan	292
32	R. R. Carkhuff	American International College	291
33	D. Byrne	Purdue University	290
34	D. C. McClelland	Harvard University	288
35	H. A. Simon	Carnegie-Mellon University	286
36	C. G. Jung	Deceased	274
37	R. Rosenthal	Harvard University	273
38	H. H. Kelley	University of California, Los Angeles	269
39	E. E. Jones	Duke University <sup>o</sup>	263
40	J. Wolpe	Temple University	262
41	R. N. Shepard	Stanford University	257
42	W. Mischel	Stanford University	252
43	E. Tulving	University of Toronto, Canada	251
44	J. Bowlby	Tavistock Clinic, London, United Kingdom	250
45	D. E. Broadbent	Oxford University, United Kingdom	242
46	A. L. Edwards	University of Washington	241
47	M. J. Rosenberg	University of Chicago	237
48	M. Deutsch	Columbia University	225
49	K. Lewin	Deceased (formerly at the Massachusetts Institute of Technology)	222
51	G. W. Allport	Deceased (formerly at Harvard University)	221
51	N. H. Anderson	University of California, San Diego	221
51	B. J. Underwood	Northwestern University	221
53	Erich Fromm	Retired (formerly at the National University of Mexico)	220
54	H. G. Gough	University of California, Berkeley	217
55	W. L. Hays	University of Georgia	214

TABLE 2

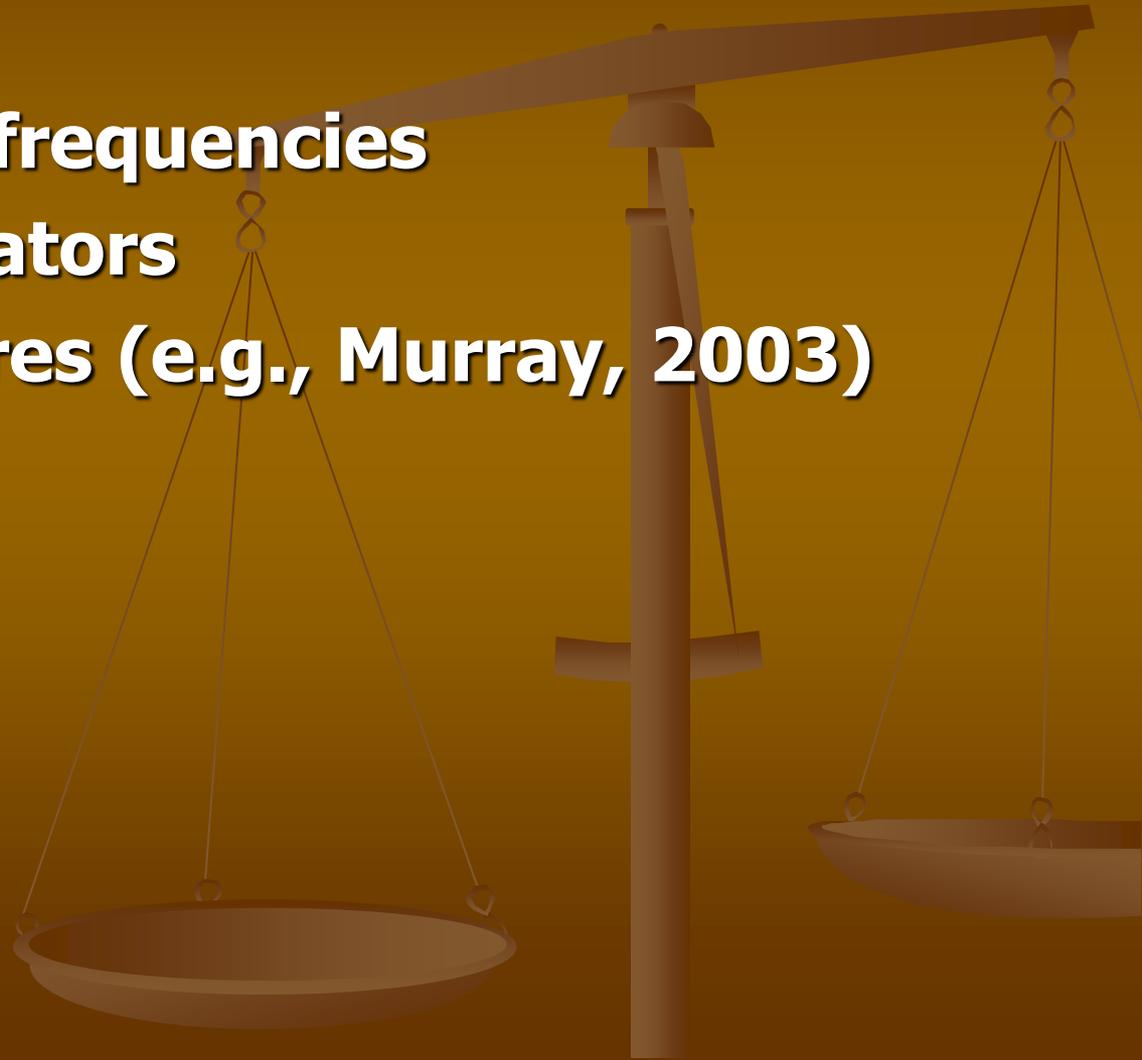
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19	C. E. Osgood	University of Illinois	356
20	L. Festinger	New School for Social Research	350

# Big-C Creativity Measurement: Archives

## ■ Examples

- Performance frequencies
- Citation indicators
- Space measures (e.g., Murray, 2003)



## CHINESE PAINTING



*Significant figures: 111*

*Index reliability: .91*

Only painting had a consistent tradition of named artists in China. The inventory thus ignores distinguished Chinese traditions in sculpture and ceramics.

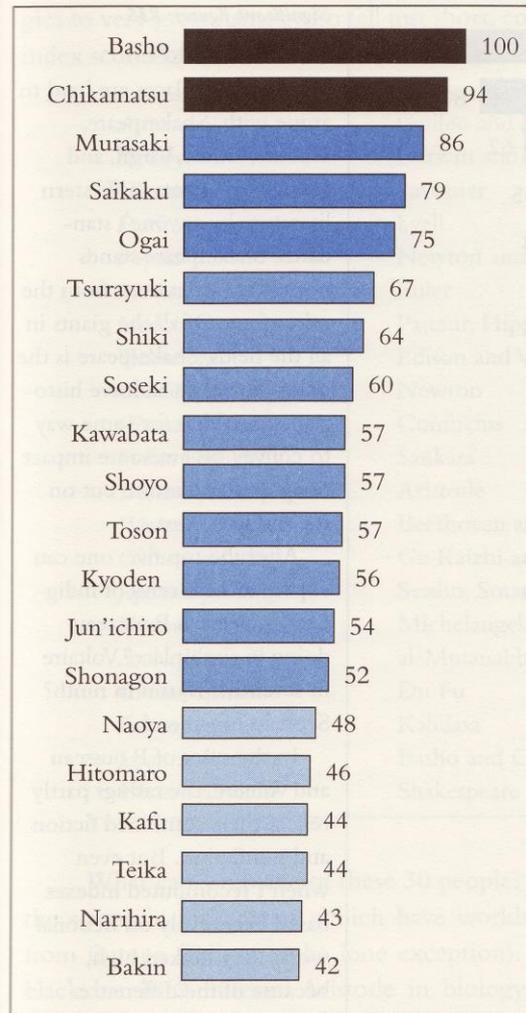
Gu Kaizhi's index score was 98.9, but he was ranked above Zhao Mengfu in a majority of the sources; hence the tie. But interpreting these scores is problematic. Gu Kaizhi (fl. 4C) and the third-ranked artist, Wu Daoxi (fl. 8C), have no surviving works of certain authenticity. The early critics after Gu Kaizhi's death differed in their evaluations of his work, with some of them unimpressed. He did not attain his semi-legendary reputation until the Tang Dynasty, four hundred years later—as if Michelangelo had not been recognized as more than merely very good until 20C.

This reliance on secondary

accounts leads to a large degree of uncertainty about who belongs where.

Significant figures are identified throughout the range from -800 to 1950, but index scores are computed only for artists through the end of 18C, as the Qing dynasty spiraled downhill. As in India, important creative cultural activity effectively shut down during an interval between the collapse of the traditional civilization and its reformulation in 20C, and many of the sources plainly treated modern artists with separate criteria.

## JAPANESE LITERATURE



Significant figures: 85

Index reliability: .86

The Japanese literature inventory is characterized by a large number of writers who receive substantial attention rather than by a few dominant figures. The variety in the first four rankings is of interest: Basho (1644–1694), by consensus Japan's greatest poet and the master of *haiku*; Chikamatsu (1653–1725), by consensus Japan's greatest dramatist, writing mostly for the *bunraku* (puppet theatre); Murasaki Shikibu (c. 978–1014), author of *The Tale of Genji*, by consensus Japan's greatest work of literature (and the highest ranking woman in any of the inventories); and Saikaku (1642–1693), writer of brilliant erotic tales and famous for his speed-writing of *haikai*, humorous linked-verse poems that were the source of *haiku*. He is said to have written 23,500 *haikai* in one twenty-four hour period, a rate of

more than 16 per minute (a story that is hard to believe).

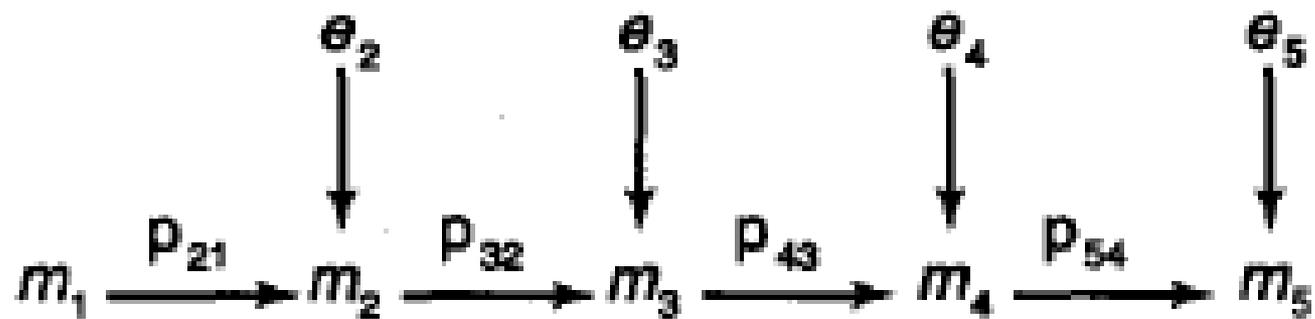
Unlike China and India, Japan did not experience a substantial gap between the end of the old order and the emergence of the new, a transition which in Japan took just a few decades at the end of 19C. Both the Japanese art and literature inventories continue from the earliest figures through to 1950.

# Big-C Creativity Measurement: Evaluation

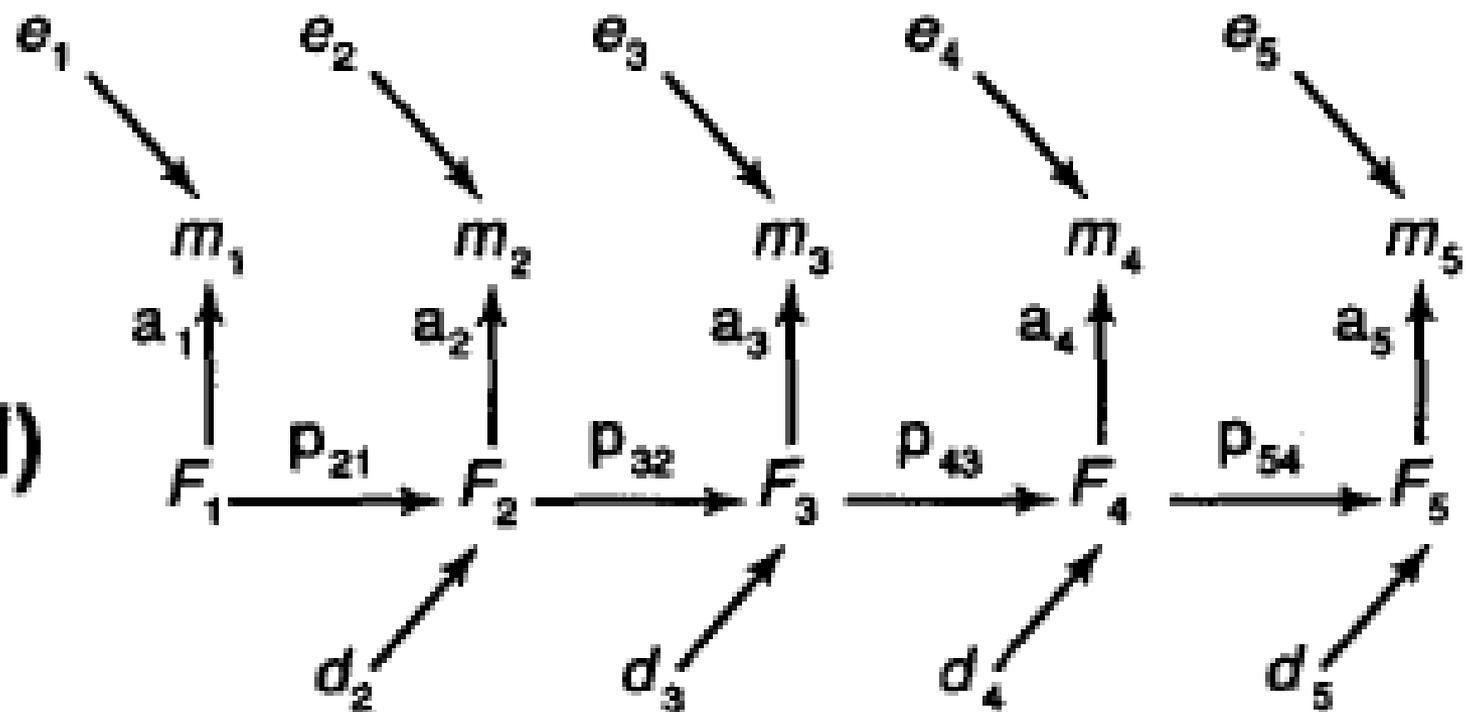
- Advantages
  - Reliability
  - Validity
  - Stability

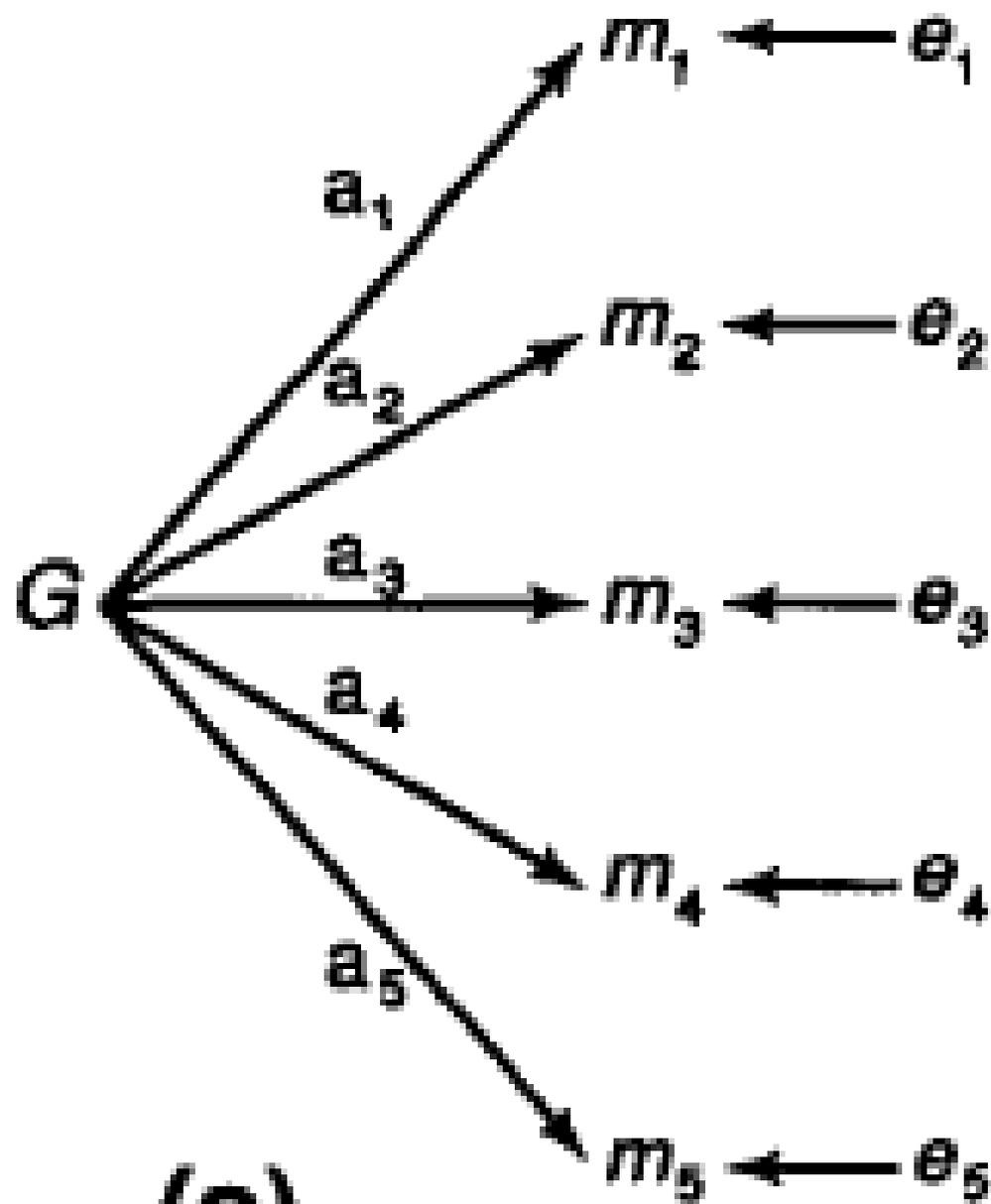


**(c)**



**(d)**





**(a)**

# Big-C Creativity Measurement: Evaluation

## ■ Advantages

- Reliability

- Validity

- Stability

- Applicability

- Diversity of achievement domains

- Variety of analytical units: Products as well as creators

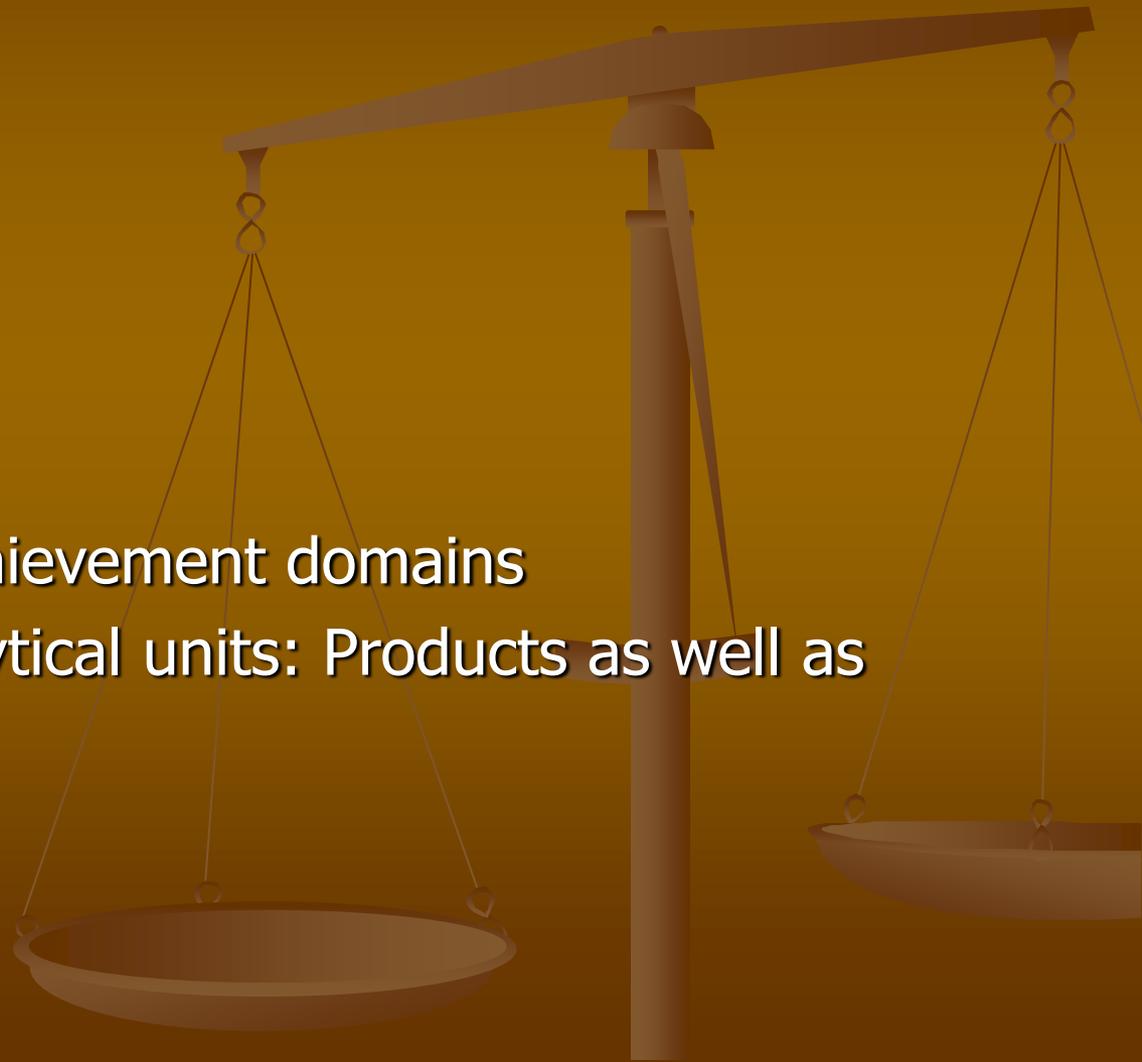


Table 1

*Correspondence Between Contemporary  
and Current Impact Measures*

Measure	Zero-order correlations ( <i>r</i> )		Regression coefficient ( $\beta$ )	
	Productions	Languages	Productions	Languages
Recordings	.48	.37	.59	.48
Videos	.46	.35	.52	.42
Performances	.56	.46	.57	.47
Dictionaries	.42	.31	.51	.40
Histories	.37	.24	.53	.38
Rankings	.31	.21	.43	.33
Global success	.46	.35	.56	.44

*Note.* All zero-order correlations and standardized partial regression coefficients are statistically significant at the  $p < .001$  level or better. The regression coefficients have the effects of performance date and libretto language partialled out.  $N = 496$ .

Table 1. Correlations of Oscar and Razzie Awards with Critic Evaluations

Category	Movie guide		Metacritic	
	Oscars	Razzies	Oscars	Razzies
Picture	.49***	-.44***	.38***	-.41***
Director	.48***	-.42***	.40***	-.43***
Male lead	.38***	-.43***	.32***	-.50***
Female lead	.32***	-.40***	.30***	-.36***
Male supporting	.38***	-.31***	.32***	-.31***
Female supporting	.34***	-.29***	.32***	-.28***
Screenplay	.63***	-.42***	.56***	-.42***
Song	.12**	-.25***	.21***	-.09

**Note:** The correlations involving the metacritic ratings are based on  $n = 183$ .

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

# Big-C Creativity Measurement: Evaluation

- Disadvantages
  - Upper tail
  - Posthumous assessment
  - Sociocultural content



# Big Questions

- How can the three levels be connected?
- Can we devise a combined measurement strategy that can assess creativity across the full range?
- If so, what form will this assessment take?

