A recodification of the Palermo and Jenkins word-association norms

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The Palermo and Jenkins (1964) word association norms were recodified, with responses alphabetically arranged, and related to the various levels of stimuli.

Several studies have generated norms of the associative relationship between verbal stimuli and responses. Perhaps the most widely used of these norms is the one collected by Palermo and Jenkins (1964). In their study the associative strength between a stimulus word and a response word was measured in terms of the percentage of Ss who reported the response word after receiving the stimulus word. For example, to the stimulus word "lamp," "light" is the prominent response given by about 71% of the Ss, while other responses (e.g., shade, table, bulb) reflect a weaker association to the stimulus word.

Frequently, Es are interested in identifying prompters for response words that may be stored in either short- or long-term memory. In a recent article, Bahrick (1969) measured recall of words by presenting Ss with prompting cues, with a predetermined probability that the cues would evoke the response. Typically, word association norms are arranged in terms of a stimulus word followed by its hierarchy of responses. The identification of specific stimuli to responses, especially remote stimuli, is an arduous task with the norms arranged in terms of stimulus words.

In order to simplify the search for responses to specific stimuli, the entire Palermo and Jenkins (1964) college norms for male and female Ss were recodified, with the responses arranged alphabetically. The stimuli were arranged in terms of their relationship to the response. For example, the word "black" was a primary response to the word "white," the second response to "red," the third response to "dark," the fourth response

to "spider," and the fifth response to "blue," "priest," "yellow," and "bed." The recodification procedure involved finding each response in the word index of *Word Association Norms* and then identifying its stimuli. The responses were alphabetically listed, and the stimuli were arranged in terms of their primacy to the response terms.

The response probability for each of the stimulus terms was calculated and appears after each stimulus. These probabilities were found by summing the total number of male and female Ss who responded with the corresponding response word and dividing by the total male and female Ss in the sample (1000). For example, the probability of black occurring as a response to white was .50; as a response to red, .14; to black, .05; to spider, .06; and to blue, .05; to priest, .04; and to yellow, .06. In some instances, the rank order of stimuli to responses does not correspond to the order of probability within a response category. Consider the response blue. The second level stimulus was yellow (.08) while the third level stimuli were green (.10), red (.13), and ocean (.10). This should be interpreted as meaning that the first response to yellow was some other word (color) and the second response was blue; the third response to green, red, and ocean was blue even though the probability of the latter three stimuli considered independently exceeded the probability of the second level stimulus.

In the present article, only the first five stimuli are presented, but the entire list of 10 stimuli is available from the second author. These recodified norms may prove useful in designing experiments in which various levels of verbal prompters are necessary.

REFERENCES

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Table 1 begins on following page.

Table 1
Responses to Various Levels of Stimuli

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
A	An .19		The .08		
Above		Stomach .16	Over .05		
Ache			Oh .10		
Ah				At .04	
All				And .07	
Alone			I .08		
Also				Citizen .07	
Am					
American					
An	A .16		An .08		
And	But .10	Or .15	Sheep .11	Dogs .01	
Animal		Lion .12		Dogs .01	People .04
Animals			Hardly .07		
Any					
Apple	Fruit .45	An .18			
	Is .10	Blossom .09			
Are			Am .10	Here .05	Where .05
			They .09	There .05	
			We .11		
			You .05		
Arm		Hand .15			
Army		Soldier .15			
		Command .07			
At			On .03	Is .07	
Autos		Cars .05			
Avenue			Street .08		
Awake	Farther .19			Sleep .09	
Away				Get .08	From .04
				Go .06	
B			A .08		Children .04
Babies					
Baby	Child .17				
Bad	Cry .28				
Bald	Trouble .11				
Barely					
Bark				Hardly .04	Eagle .01
Be					
Beak		Become .05	Dogs .03		Eagle .01
Became					
Because	Become .19			But .06	
	Although .11			For .05	
	Therefore .20			However .03	
Bed	Why .20			Sickness .08	Soft .04
Beef	Sleep .21	Comfort .10		Mutton .03	Thirsty .01
Bible				Religion .04	
Big				City .05	Lion .03
				House .03	
Bird	Eagle .58			Yellow .07	
Bitter				Sour .06	
				Salt .03	
Black	White .50	Red .14	Dark .05	Spider .06	Salty .04
					Blue .05
					Clean
					Close
					Priest .04
					Yellow .06
					Bed .02
Blanket					
Black					
Blood			Square .09		Red .06
Bloom					Blossom .02
Blow				Whistle .06	

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Blue		Yellow .08	Green .10		
			Red .13		
			Ocean .10	Head .04	
Body					
Book		Bible .17	Whiskey .05		
Bottle			Buying .06		
Bought				Square .04	
Box				Child .08	
Boy	Girl .60	Man .08		He .04	
	The .13	Baby .11			
Branch					Stem .03
Brave	Butter .58	Cheese .03		Afraid .03	
Bread					
Break					Make .05
Brick					House .03
Bright					
Brother					
Bug		Spider .14	Younger .05	Light .05	
Build		Make .06		Boy .01	
Building					
Bulb				High .03	
Bullets				Lamp .02	
Buses					
But		Guns .09	Cars .05		
	And .23	Although .09			
	However .17				
Butter	Bread .47				
Buy	Sell .56			Stand .04	
By				His .02	
Cabin				House .03	
Car		Street .10	Slow .03		
		Sweet .16			
Candy					
Came					
Cards					
Cat		Dogs .15	Come .09	Playing .06	
		Kittens .37		Black .02	
Catholic		Priest .19	Religion .05	Lion .05	
Cats					
	Dogs .68				
	Kittens .37				
	Table .69				
Chair			Comfort .09	Sit .08	
Change				Become .02	
Cheese					
Child			Cottage .09		
Children		Children .09	Baby .08		
		Younger .07	Woman .05		
Christmas					Playing .05
Church				Joy .04	Younger .03
Cigarette		Religion .21		Bible .07	
Cigarettes		Tobacco .17			
Circle				Tobacco .04	
Climb		Square .14			
Clean					
Close					
Clothes			Farther .12	Mountain .05	
Clothy				Scissors .04	Table .03
Cold		Buying .08		Sell .02	
Colder		Clearer .05			
Color		Hotter .13			Dark .01
	Hotter .49				Blue .06
	Yellow .09				Red .07
					Black .02
					Green .05

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Come	Go .17			How .06	Bed .02
Comfort				Stove .10	
Cook				Hotter .03	
Cooler					Numbers .01
Count					Citizen .06
Country					
Course	Of .12				
Court				Justice .10	
Crackers			Cheese .07		
Cream			Sour .08		
Create			Make .06		
Crook			Thief .06		
Crowd					
Crown	People .14	King .04			
Cry	Baby .12				
Current	Scissors .68				Swift .03
Cut					Square .03
Dance					
Danger			Trouble .04		
Dark	Light .49	Black .09	Afraid .08		
		Deep .17	White .03		
Darker				Clearer .04	Light .04
Day				Live .06	
Dead			Sickness .10		
Death				Ocean .05	
Deep					Wish .06
Desire					Lamp .01
Desk			Table .03		
Die	Live .33				
Dirt	Earth .14				
Disappear		Appear .18		Farther .05	Command .01
Distance	Make .09			The .04	A .07
Do					Sheep .03
Dog					Kittens .02
Dogs					
Door					Sleep .06
		House .07			Girl .02
Down	Sit .27	Window .11			Woman .05
Dream	Wish .15				
Dress					Cars .04
Drink	Whiskey .33	Thirsty .29			
Drinking	Eating .12			Lift .07	
Drive		Whiskey .11	Thirsty .11		
Drop					
Drunk				Comfort .07	Take .05
Dry				Hard .03	
Easy					
Ease					
Eat					
Egg					
Either					
England					
Ever					
Eye	Hardly .21		Always .06	King .01	For .05
Face					Needle .07
Face				See .05	
Family					
Far				House .03	Head .04
				Long .02	
				So .04	Closer .03

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Farther Fast	Quickly .42 Running .24 Slow .63 Slowly .35 Swift .45	Closer .24	Go .09		Very .03
Faster Fat		Slowly .16	Short .14 Thinner .10	Easier .04	Broader .02 Eating .04 Heavy .05
Fatter Fear	Thinner .32 Afraid .28			Anger .05 Trouble .03	Over .03 Trouble .03
Fence Fight Figures Finger Fingers Fire Fit			Hand .13 Guns .06	Numbers .06 Hand .07	Stove .06 Shoes .03
Feet Five Floor Flow Flower Flowers Fly	Shoes .36		Carpet .15	Fingers .04	River .04
Foggy Food	Stem .40 Blossom .63	Fruit .09 Eagle .10		Butterfly .07	
Foot Forever Forget Found From Full Fun Further Games Garage Girl	Clearer .06 Eating .42 Hungry .41 Stomach .24 Hand .23	Bread .14 Table .06 Head .06 Always .14	Cabbage .12	Cheese .06 Mutton .07	Salt .04
	To .22		Memory .06		Find .06
		Playing .11		Hungry .04	
			Playing .10 House .04		Farther .05
	Boy .70	Beautiful .16 Woman .09	Man .03		Dream .02
	Take .12 Glass Glove Go	Window .22			Hand .05
	Come .36	Get .10 To .10			
Goat God	Bible .32 Religion .24				Sheep .03 Him .02
Goin' Good		Very .08	Ah .06 Health .09	Have .06	Am .04 Memory .04
Got Grass Green Ground Gun Ha	Get .13 Green .41		Blue .11	Cabbage .08	
		Earth .13		Soldier .09	Ah .04

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Had	Head .19	Have .15			
Hair	Fingers .34		Foot .13 Fingers .12		Smooth .01
Hands		Joy .20			Health .05
Happiness	Joy .26	Easier .10		Health .05	
Happy	Soft .30	Rough .07	Heavy .06		
Hard	Working .15		Smooth .11		
	Easier .42		Anger .06		
Harder		Him .08			Although .06
Hate					Was .05
He					
Health	Sickness .37		Doctor .08		Carry .04
Hear		Stove .17	See .08		Hotter .02
Heat		Lift .11			
Heavy					
Hell					
Hell					
Her	Him .63	His .20	He .05	At .05	Am .04
Here	There .37	Come .15		From .07	
		Where .19		Now .04	
				This .02	
Hers	His .48			Eagle .02	
High	Jump .16	Mountain .18		Over .03	
Hill	Mountain .21				
Him		He .07			Him .02
His					My .04
Hit		Hammer .08			
Hold	Carry .10				
Home	At .18			Come .05	
	House .23			Cottage .08	
Hop			Wish .09		Jump .06
Hope	Cold .33				
Hot	Stove .23				Thirsty .01
	Cottage .26				
House			Doors .07		
			Live .06		
However		Therefore .09	Although .09		But .04
Hunger				Eating .05	Stomach .05
Hungry				Stomach .05	
				Thirsty .05	
I	Am .24	If .06			
		Me .10			
Ice		You .08			Cold .04
If					However .04
Ill		As .14			Or .04
In		But .08			
Insect		Sickness .14			
Inside			On .10	At .05	
Intestine		Butterfly .10	Spider .12		In .05
Is	As .17	Am .12	Become .05	He .04	Stomach .05
	It .36	That .11	Here .06	Where .08	
	Who .13	This .23	What .09		
	Was .25				
Isn't		Is .09	Was .10	As .04	See .05
It		Is .09		Make .05	That .04
		Take .10			This .02
		The .11			

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Jesus			Justice .13		Bible .04
Judge				Running .04	
Jumping					
Kids	Children .19				Butter .03
Knife					Doors .03
Knobs				Shoes .04	
Laces		Cottage .16			
Lake		Sheep .18			
Lamb		Light .08			
Lamp					
Later					
Laugh					
Law			Cry .07		Now .04
Leaf	Justice .24				
Leg			Stem .12		
Legs				Foot .11	
Lemon					Chair .02
Letters		Sour .10		Bitter .02	Spider .05
Lettuce	Numbers .19				
Life		Cabbage .14			
Lift		Live .13			
Light			Carry .08		White .02
	Dark .62		Soft .06		
Line	Heavy .42			Moon .05	
Liquor	Lamp .71			Window .06	
Load				Whiskey .05	Long .01
Loafing		Working .06			Short .02
Long		Short .21		Carry .04	
Look	See .15	Appear .06		Heavy .05	
		Find .08			
Lose	Find .19				
Lost		Find .18			Speak .04
Loud	Quiet .25				Live .05
Loudly	Quietly .14				Beautiful .05
Love					
Lovely				Quietly .07	Religion .04
Low	High .57				Bitter .01
Lutheran					
Mad	Anger .35				
Made				Make .05	
Man	Woman .53	Boy .05		Priest .07	He .03
	Citizen .16			Working .05	King .01
	Soldier .18				
Math			Numbers .08		
Maybe	I .38	For .07	If .05		
Me	Tell .25			By .04	He .03
	You .61			Him .03	With .05
				My .08	
				To .05	
				Who .07	
Meat			Mutton .09		
Medicine				Doctor .06	
Men				People .04	
Meow				Kittens .03	
Milk				Butter .03	
Mind	Memory .12				Sour .06
Mine	My .14				
Mississippi					
			His .03		
			River .09		
			AVANCE		

Stimuli						Stimuli					
Response	Level 1	Level 2	Level 3	Level 4	Level 5	Response	Level 1	Level 2	Level 3	Level 4	Level 5
Sandpaper			Rough .07			Sound	Sweet .35	Music .16	Whistle .06		Loud .02
Sat			Sit .16			Sour		Bitter .15			Whiskey .05
Say		Afraid .24	Speak .05			Speak			Tell .08	Blossom .02	
Scared					Hardly .04	Spoke		Speak .14			By .03
Scarcely					Boy .01	Stand		Sit .26			
Scout						Star	Moon .24				
Sea		Ocean .16	Chair .05	Salty .08		Steal	Thief .26			Take .06	
Seat			Clearer .05		Window .05	Still		Stand .13			Sit .03
Seem	Appear .22			Appear .05		Stockings			Shoes .05		
Selling	Buying .41		Needle .09	Buying .05		Stomach			Hungry .05		
Sew		Lamp .10				Stood		Go .13		Slow .02	Stand .04
Shade	Deep .17	Needle .12				Stop			Sell .03		Whistle .06
Shallow		Scissors .10	Him .03		Me .02	St. Paul			Hotter .05		City .05
Sharp	He .61	Mutton .29				Store		River .15	Bible .07	Tell .07	
She						Stove			Salt .05		
Sheep	Foot .26					Sugar			Sweet .10		
Shoe	Guns .20					Sun			Light .07		
Shoot	Long .63					Surprise			Moon .09		Oh .05
Short					Guns .04	Sweet	Bitter .54				
Shot					Appear .03	Table					
Show					Bath .04	Talk	Salty .11		Lamp .06		On .03
Shower	Doctor .11					Tall	Chair .43				Get .05
Sick	Health .23	Health .12	In .08		Doctor .05	Taste	Speak .25	Tell .08			Man .02
Sickness						Tears	Short .41		High .04		
Side					Slow .02	Temper			Long .02		
Sign					Easier .03	Than			Bitter .04		
Silk						That					
Simple						The					
Sit	Stand .38	Chair .22		Thinner .07		Them					
Skinny					Earth .05	Then					
Sky	Blue .25		Quiet .07	Deep .06	Comfort .06	There					
Sleep	Bed .58		Eating .07			Therefore					
Sleeping	Dream .49		Faster .07			They					
Slow		Working .06	Swift .16	Quickly .09	Slowly .03	They	Now .38	At .08	From .09		
		Swift .16	Quickly .09			Where .21	Where .21	Over .14	So .04	That .08	
Slower						We .36			Then .10	However .07	
Slowly	Faster .49	Quickly .23	Child .08	Children .05	Baby .06	Thinner .11			Us .11	Me .03	It .03
Small				Short .03		That	This .44	So .04	It .08	You .03	Who .06
						The			And .09	Long .02	
Smoke						Them			By .07	It .08	
Smoking						Then	They .31	Us .12		Faster .03	
Smooth						There	Now .38			Then .04	
Snow						Therefore	Here .67			Younger .04	
						They	Where .21			A .08	
So						Thicker				In .05	
Soap						Thin				Of .06	
Soar						Thing				We .04	
Sob						Think				So .03	
Socks						This				To .04	
Soft						Thread					
						Tiger					
Softly											
Sold											
Sometimes											
Song											
Soon											
Sorrow											

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Tired	From .20	Foot .15	Sleep .09	Closer .05	Foot .07
Toe		Fingers .14	At .08		Us .03
Toes					
Together					
Told					
Tool			Take .08		
Top		On .11		Table .03	
Town					
Train					
Tree	City .23				
Trucks	Whistle .11				
Tub	Cars .11		Blossom .04	Stem .03	
Turtle				Bath .05	
Ugly		Slow .04			
Under	Beautiful .17				
Uniform	Over .39				
Up					
Us		Jump .16	Lift .11		Soldier .06
USA		We .19	Stand .10		High .03
Valley			Citizen .10		They .07
Vegetable					Mountain .05
Vote	Cabbage .14				Fruit .05
Walk					Citizen .05
			Running .05	Slowly .05	Carpet .03
					Slow .04
					Street .05
Walking		Running .22			
Want		Wish .13			
War			Soldier .11	Guns .03	
Warm			Cold .17	Soft .05	
Was		It .11	As .05	Become .02	
			Is .09		
Water	Ocean .36	Bath .26	Deep .10	Salt .05	Bread .02
	River .29		Salty .08		Clearer .04
	Thirsty .13				Running .03
Waves					Ocean .04
We	Us .51	They .14		Therefore .07	Although .03
					I .02
Web					
Weep	Spider .38				
Weight		Heavy .06		Cry .05	
Well				Wish .07	Sickness .03

Response	Stimuli				
	Level 1	Level 2	Level 3	Level 4	Level 5
Were	For .15	Was .17	Who .07		Become .02
What	So .29				Why .05
Wheels				Cars .04	
When		Then .14	How .07	Why .06	What .08
			Now .04		
			Where .16		
Where		From .11	There .09		Here .02
		What .10			To .04
Which				That .04	
White	Black .59	House .07		Bread .02	
	Red .16				
Whom		Who .09			
Why		Because .15	But .07	What .08	If .05
		How .13			
Wide			Broader .13		
Wider	Broader .23			Doors .04	
Window					
Windows	Doors .36				Bread .02
Wine					
Wings			Eagle .02		
Winter					
Wish			Dream .05		
Without	With .18				
Woman	Man .62	Girl .04		Beautiful .08	
Women			Man .05		
Wool	Sheep .19				
Work					Hard .02
Working	Playing .14				
Yellow		Butter .11	Butterfly .07	Green .05	Moon .05
			Cheese .07		
Yes				Ah .05	
				Oh .06	
You	Me .62	I .28	With .08	We .19	As .04
		Only .06	To .07	Us .08	
			Because .07	If .06	
			For .07		
Young			Have .06		Child .04
			Boy .01		
Your			Girl .03		
Yours		My .11	My .08		