

MONETARY INCENTIVE, AGE AND COGNITION

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It has been stated that the existing science of human behavior is largely the science of the behavior of sophomores (McNemar, 1946); furthermore, it may be the science of those sophomores who both enroll in psychology courses and volunteer to participate in behavioral research (Rosenthal and Rosnow, 1975). Naturally, that particular criticism cannot be levied at gerontological research, however, the methodological question to which it alludes, the characteristics of the self-selected subject population, is of considerable importance.

Although not a great deal of research which describes age differences in the characteristics of volunteers has been undertaken, results from research concerned with cohort differences would suggest that older volunteers differ from younger volunteers by more than simply their difference in age. In a review of the pertinent literature, Rosenthal & Rosnow (1975) found that a relationship between age and volunteering was observed quite often. In general, volunteers tend to be younger. When older persons do volunteer more than likely it is for survey research rather than for laboratory studies.

Recent changes in attitudes toward research participation by human subjects have led to increased employment of monetary incentives. Such an approach may have a profound effect upon the self-selection of volunteers. Studies dealing with this relationship normally have employed younger subjects. MacDonald (1972), for example, employed three incentive conditions: 1) for pay; 2) for extra credit; and 3) for love of science. Only

In the pay condition were subjects high in need for approval on the Marlowe-Crowne scale more willing to volunteer than subjects low in need for approval. Consequently, employing a payment condition did alter the characteristics of the volunteer sample.

Unable to find a comparable study using older adults, we set out to determine the effect of a monetary incentive upon self-selection of volunteer subjects across the adult age range. Specifically, we wanted to determine if those subjects who had been promised payment differed on certain personality and intelligence factors from those who had not been told they would be paid.

PROCEDURE

Subjects

Subjects were randomly selected within year of birth and sex from the membership of a large (approximately 186,000) prepaid medical plan. Invitations to participate in the study were sent to 2466 members. Half of the letters informed subjects they would be paid (P) for their participation, while in the other half (NP) no mention of payment was made. A stamped postcard was enclosed in which the potential subject was to indicate whether or not he/she was willing to participate. No response was received from approximately half of each group (NP=49%, P=50.5%). Of those responding, 35.4% of the NP (No payment) subjects and 33% of the P (Payment) subjects declined to participate. Since not responding is tantamount to declining to participate, this resulted in 32% of the NP and 34% of the P subjects who accepted our invitation to participate. Of these, 310 NP and 309 P subjects were eventually tested; however, due to incomplete data, 27 subjects (47P, and 10 NP) were excluded from the analysis leaving a total

of 592 subjects (Table 1). Subjects were tested by payment condition in groups of about 20. All subjects filled out: 1) a questionnaire designed to evaluate member satisfaction with the medical plan; 2) the Primary Mental Abilities (PMA) Test; and 3) the Test of Behavioral Rigidity (TBR) (Schaie & Parham, 1975). Subjects were then given the Life Complexity Inventory (LCI) (Schaie & Gribbin, 1975), a questionnaire designed to describe present life style, and the 16 PF (Cattell, Eber & Tatsuoka, 1970), which they were to complete at home and return to us by mail. Subjects in both conditions were paid upon receipt of these forms. Completed 16 PF's (Form A or Form B) were received from 82 (59%) NP and 82 (57%) P men, and from 129 (75%) NP and 114 (69%) P women (Table 1). Chi squares showed no significant differences in rate of return by sex or age and condition.

For purposes of analysis, data were organized by 10-year age intervals, and analyzed by $2 \times 2 \times 7$ (Condition \times sex \times age levels) ANOVA'S on each of the primary source traits and secondary stratum factors of Form A and Form B of the 16 PF, and on the 5 intelligence factors--Verbal (V), Space (S), Reasoning (R), Number (N), and Word Fluency (W)--two derived quotients--Intelligence Quotient (IQ) and Educational Aptitude (EQ)--and factor scales from the TBR--Motor-cognitive Rigidity (MCR), Personality-perceptual Rigidity (PPR), Psycho-motor Speed (PS), and the Social Responsibility Scale (RESR).

RESULTS AND DISCUSSION

Summary results of the analyses of variance of the primary source traits of the 16 PF are presented on Table 2. Initial analyses had shown, as has been found before, significant differences by Form, sex and age level on various traits. In addition, a significant 3-way interaction ($p < .007$), Form \times Cond \times Age Level, was found on C, Ego Strength. As can be seen in

Table 2 and Figure 1, this was primarily attributable to Form B where, except for those aged 39-48, subjects in the P condition were less than or approximately equal to those in the NP condition. Since our main concern is the effect of monetary incentive, we will not discuss the already well established differences by Form, Sex and Age Level.

Because there were unequal cell sizes by Form, and thus significant effects could be washed out by weighting factors, we also ran separate analyses for Form A and Form B. No significant differences involving Form A resulted. On Form B, however, besides the already discussed difference on C, a significant Condition by Age Level interaction was found on L, Alaxia (Trusting)/Protension (Suspicious). Although all subjects were relatively low, i.e., trusting, on this variable, those in the P condition were lower or the same as those in the NP condition for all age levels except those aged 69-78. P subjects in this age group manifested a higher mean than any other group.

Our next step was to look at the secondary stratum factors of the 16 PF. As can be seen in Table 3, only III, Pathemia (Sensitivity, Emotionalism) - vs - Corteria (Tough Poise) showed a significant main effect ($p < .01$). Separate ANOVA's by Form showed this finding to be primarily attributable to Form A. Low scoring individuals on this trait show a tendency to feel rather than think. Subjects in the P condition ($M=5.35$) were significantly lower than those in the NP condition ($M=5.62$).

Separate ANOVA's by Form (See Table 3) also showed a significant condition by Age Level interaction on V, Naturalness/Discreetness. Since Cattell (1970) has not yet investigated the criterion associations with this factor the findings cannot be interpreted. Nevertheless, for those of you interested, scores of subjects in the P condition were generally equal to or

lower than those in the NP condition except for those aged 39-48 (and possibly those aged 69-78 but much less so) (See Figure 2).

No significant results involving Condition were observed on either the PMA or the TBR.

Results of these analyses lead us to conclude that supplying a monetary incentive to induce subjects to participate in a study does not significantly alter the nature of the sample either with regard to age or sex. On a select few personality traits, monetary incentive did seem to affect one or another age group; however, the proportion of variance accounted for is slight. Of perhaps even greater import, however, on tests of intellectual functioning and cognitive style, employment of monetary incentive had no effect on the characteristics of the sample.

Such results should not be interpreted as supporting a case for not paying subjects. It might be argued that one should avoid paying subjects if not absolutely necessary. On the other hand, there are designs or circumstances which either warrant or require paying subjects. In these cases, the findings of this study suggest that results from studies employing monetary incentives may be generalized to those which do not, without fearing that the samples differ on characteristics attributable to having offered to pay them for their participation...

References

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Table 1
Subjects: Broken down by age level and sex

AGE LEVEL	PMA-TBR						16 PF: TOTAL			
	NP		P		TOTAL		NP		P	
	M	F	M	F	M	F	M	F	M	F
79-88	10	15	13	16	23	31	7	11	6	11
69-78	17	33	19	24	36	57	11	22	12	17
59-68	21	35	22	21	43	56	11	29	16	19
49-58	23	31	23	31	46	62	16	23	11	21
39-48	21	23	25	22	46	45	15	18	17	15
29-38	24	20	22	21	46	41	13	15	13	15
21-28	14	13	10	23	24	36	9	11	7	16
Total	130	170	134	158	264	328	82	129	82	114
	300		292							

	16 PF: FORM A				16 PF: FORM B			
	NP		P		NP		P	
	M	F	M	F	M	F	M	F
79-88	4	2	4	2	2	9	1	4
69-78	5	11	7	6	4	8	4	8
59-68	1	12	10	10	6	11	2	5
49-58	6	9	4	16	7	9	4	4
39-48	8	9	7	8	5	8	10	7
29-38	7	8	5	9	6	6	4	3
21-28	5	4	4	11	2	4	2	1
Total	36	55	41	62	32	55	27	32

Table 2
Analysis of Variance: 16 PF

		Primary Source Traits							
df		A	C	F	H	L	N	Q ₁	Q ₃
1	Cond	19.54***	8.74***	12.08***	3.678**	12.32***	13.54***	21.35***	7.58**
1	Sex						8.77***		6.24***
6	Age								
1	CXS								
6	CXA								
6	SXA								
6	CXSXA								
N=379									
1	Form	13.54***							
1	Cond								
1	Sex	19.14***	5.64***	9.79***	2.74**	9.24***	10.14***	12.52***	4.49***
6	Age						7.68***		
6	FXCXA		3.045***						
N=289									
1	Form A	7.698**							
1	Cond								
1	Sex								
6	Age								
1	CXS								
6	CXA								
6	SXA								
6	CXSXA								
N=166									
1	Form B	13.75***							
1	Cond								
1	Sex								
6	Age								
1	CXS								
6	CXA								
6	SXA								
6	CXSXA	2.9**	2.194*	6.06***	7.247**	4.21***			
N=188									

* p < .05
 ** p < .01
 *** p < .001

Table 2 (Cont'd)
Analysis of Variance:16 PF

		Primary Source Traits							
df		B	E	G	I	M	O	Q ₂	Q ₄
1	Cond								
1	Sex								
6	Age	8.59***	41.8*** 10.05***	8.84***	96.27***	9.60*** 6.50***	19.23***		7.24***
1	CXS								
6	CXA								
6	SXA								
6	CXSXA								
N=379									
1	Form	34.82***							
1	Cond								
1	Sex								
6	Age	5.75***	32.42*** 8.2***	8.3***	87.55***	5.48***	4.5***		
6	FXCXA								
N=289									
1	FORM A								
1	Cond								
1	Sex								
6	Age	3.331***	19.1*** 7.45***	6.514***	52.2***	3.09***	9.53***		
1	CXS								
6	CXA								
6	SXA								
6	CXSXA								
N=166									
1	FORM B								
1	Cond								
1	Sex								
6	Age	3.19***	16.6**		35.8***	2.81**			
1	CXS								
6	CXA								
6	SXA								
6	CXSXA								
N=188									

* P .05
** P .01
*** P .001

Table 3
Analysis of Variance: 16 PF

	Secondary Stratum Factors and Criterion Scores											
	I	II	III	IV	V	VI	VII	VIII	Neroticism Leadership Creativity			
									School Achievement			
Cond Sex Age	8.09***	18.75***	5.83*** 122.78*** 7.64***	56.1*** 8.93***	27.63*** 13.71***	40.73*** 4.09***	9.31***	14.39***	53.18*** 3.02**	19.98*** 2.9**	6.57** 2.95**	13.73***
Form Cond Sex Age	6.98***	12.28**	5.01* 104.63*** 5.83***	12.42*** 36.47*** 6.06***	21.98*** 11.1***	37.13*** 3.56**	6.36***	11.07***	42.6***	14.22*** 2.66*	17.74*** 2.98**	63.14*** 6.74**
Form A Cond Sex Age	4.46***	7.29**	5.13* 50.45*** 5.97***	26.09*** 4.91***	19.88*** 6.98***	25.39*** 3.12**	3.678**	8.15***	27.37***	9.3***		9.33***
Form B Cond Sex Age CXA	3.15**		58.42***	11.59	5.28*** 3.15***	11.66***	3.172**	3.94**	14.63***			

* p < .02
** p < .01
*** p < .001

Table 4
 Analysis of Variance: PMA

	V	S	R	W	N	IQ	EQ
Cond							
Sex	6.25**	25.00***		7.06**			6.36**
Age	60.34***	55.67***	83.7***	23.23***	15.53***	62.4***	74.01***
CxS							
CxA							
SxA							
CxSxA							

TBR ANOVA

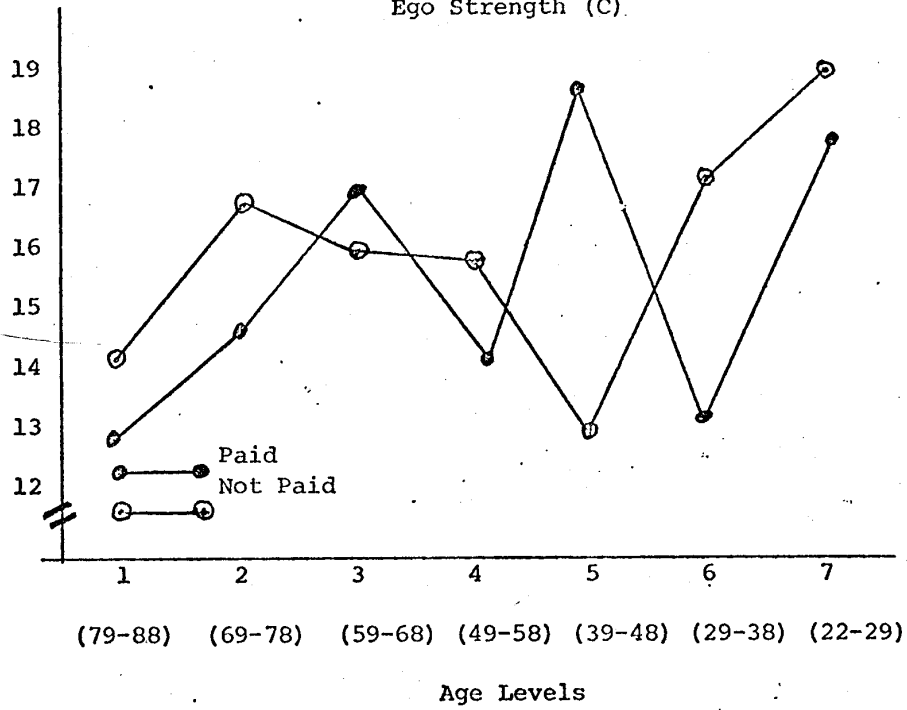
	MCR	PPR	PPS	COMPR	RESR
Cond					
Sex			34.19***	9.45**	6.54**
Age	28.58***	27.92***	51.22***	73.87***	5.12***
CxS					
CxA					
SxA					
CxSxA					

** p .01
 *** p .001

Figure 1

16 PF Form B

Ego Strength (C)



16 Pf Form B

Alaxia/Protension (L)

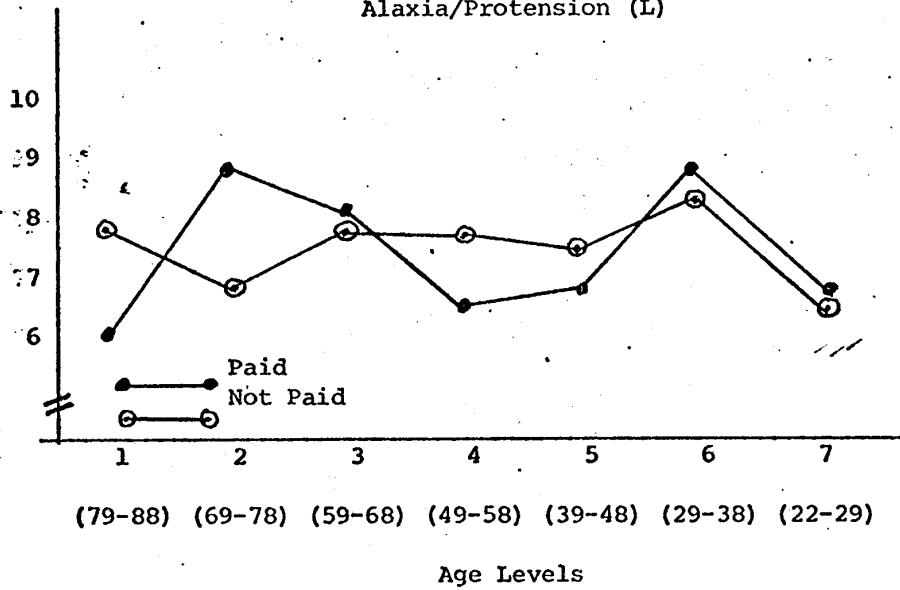


Figure 2

16 PF Form B

