PACE YOURSELF: THE ROLE OF PERSONALITY ATTRIBUTES OF COGNITIVE ENGAGEMENT IN SUCCESSFUL INTELLECTUAL AGING

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RATIONALE

Individual differences in activity, self-efficacy, and personality may contribute to maintaining cognitive functioning with age (Levy & Langer, 1999; Schaie, 2005; Hultsch et al., 1999). We explored these relationships in the context of participation in the Senior Odyssey, an ongoing program of intellectual engagement.

Our goals were:

- To establish the psychometric viability of a measure of personality attributes reflecting cognitive engagement (PACE).
- To examine the interrelationships among PACE, activity, self-efficacy, and cognitive ability.

METHOD

Participants

Participants were community-dwelling elders and residents of local retirement apartments.

Procedure

Following pretest, a subset of participants were randomly assigned to participate in the Senior Odyssey program (or to a wait-list control). Based on the principles and activities of Odyssey of the Mind (www.odysseyofthemind.com), the Senior Odyssey program engages cognition in the context of collaborative creative activity on a regular basis over a 20-week season. Senior Odyssey incorporates both divergent and convergent problem solving to exercise speed of processing, working memory, fluency, visual-spatial processing, and inductive reasoning in a context that rewards active participation and creativity.

Measures

Participants were administered a battery assessing performance on a variety of cognitive measures (e.g., Ekstrom et al., 1976; Salthouse, 1991), personality (i.e., mindfulness, Bodner & Langer, 2001; MIDI openness, Lachman & Weaver, 1997; need for cognition, Cacioppo & Petty, 1982), memory self-efficacy (Dixon et al., 1988), and activity level (Hultsch et al., 1999) (see first column of Table 2). Initial scores from these measures were used to explore the relationships between personality, activity, and cognition.

Table 1. Participant characteristics

	Overall (N=189)	
	M	**SD**
Age	72.9	8.2
Education	16.1	2.7
MMSE	28.0	1.7
Activity	279.3	43.6
Mindfulness	106.5	15.1
Openness	20.7	3.8
Need Cog	14.0	21.4
Self-efficacy	99.4	16.8

RESULTS

Table 2. Correlations between cognitive abilities (vertical) and activity level, self-efficacy, and PACE (horizontal)

	Activity	Self-Eff	PACE
Processing Speed			
Letter Comparison	0.37 **	0.14	0.08
Pattern Comparison	0.32 **	0.12	0.11
Finding As	0.21 **	0.02	0.03
Identical Pictures	0.41 **	0.13	0.09
Speed Scale (α=.85)	0.39 **	0.12	0.09
Working Memory			
Letter/number sequencing	0.34 **	0.24 **	0.02
Inductive Reasoning			
Letter sets	0.33 **	0.19 *	0.16 *
Figure Classification	0.32 **	0.17 *	0.16 *
Everyday Problem Solving	0.36 **	0.14	0.09
IR Scale (α=.67)	0.41 **	0.22 **	0.18 *
Visual-Spatial Processing			
Card Rotation	0.29 **	0.14	0.03
Hidden Patterns	0.40 **	0.14	0.11
VS Scale (α=.67)	0.40 **	0.16 *	0.09
Divergent Thinking			
Substitute Uses	0.31 **	0.19 *	0.32 **
Ornamentation	0.05	-0.03	0.12
Opposites Test	0.39 **	0.11	0.31 **
Alternative Uses: Fluency	0.26 **	0.15 *	0.33 **
Alternate Uses: Orig	0.30 **	0.19 *	0.12
Word Association	0.13 **	0.06	0.19 *
FAS	0.23 **	0.19 *	0.29 **
DT Scale (α=.74)	0.38 **	0.20 **	0.41 **
Verbal Ability			
Extended Range	0.19 **	0.10	0.12
MMSE	0.38 **	0.32 **	0.09

* p<.05, **p<.01

Table 3. Correlations between cognitive scales, activity level, self-efficacy, and PACE

	WM	VS	IR	DT	Verbal	Activity	Self-Eff	PACE
Processing Speed	0.48 **	0.63 **	0.60 **	0.54 **	0.28 **	0.39 **	0.12	0.09
Working Memory		0.44 **	0.59 **	0.43 **	0.33 **	0.34 **	0.24 **	0.02
Visual-Spatial Processing			0.71 **	0.39 **	0.30 **	0.40 **	0.16 *	0.09
Inductive Reasoning				0.54 **	0.39 **	0.41 **	0.22 **	0.18 *
Divergent Thinking					0.39 **	0.38 **	0.20 **	0.41 **
Verbal Ability						0.19 **	0.10	0.12
MMSE						0.38 **	0.32 **	0.09
Activity							0.24 **	0.29 **
Self-Efficacy								0.33 **

* p<.05, **p<.01

FINDINGS

- Mindfulness, openness, and need for cognition were combined to form a scale to assess a predisposition toward cognitive engagement (PACE). This scale showed good internal consistency (α=.84), and was related to self-reported activity level (r =.29), memory self-efficacy (r =.33) and to certain facets of cognition (See Table 2).
- Consistent with earlier findings, cognitive effectiveness was related to activity level, self-efficacy, and PACE (Tables 2 and 3).
- Individual differences in the predisposition toward cognitive engagement (PACE) were related to inductive reasoning and divergent thinking.

CONCLUSION

Individuals who tend to seek out opportunities for intellectual engagement demonstrated higher performance on certain aspects of cognition, as well as on MIA self-efficacy. This research suggests that a stable predisposition to intellectual engagement may contribute to maintenance of an active lifestyle and enhance certain aspects of cognition over the life span, thus facilitating successful aging.

We are grateful from support from the National Institute on Aging (R03 AG024551) and NIA Roybal Center for Healthy Minds (P30 AG023101).
We also would like to thank Joanne Rompel and Sammy Micklus from Odyssey of the Mind for their advice, support, and materials.
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REFERENCES

Bodner, T. E., & Langer, E. (2001, June 15). *Individual differences in mindfulness: The Mindfulness/Mindlessness Scale.* Paper presented at the American Psychological Society, Toronto, Ontario, Canada.

Ekstrom, R. B., French, J. W., & Harmon, H. H. (1976). *Manual for the kit of factor-referenced cognitive tests.* Princeton, NJ: Educational Testing Service.

Hultsch, D. F., Small, B. J., Hertzog, C., & Dixon, R.A. (1999). Use it or lose it: Engaged lifestyle as a buffer of cognitive decline in aging? *Psychology and Aging, 14,* 245-263.

Lachman, M., & Weaver, S. L. (1997). *The Midlife Development Inventory (MIDI) personality scales: Scale construction and scoring* (Tech. Rep. No.1). Waltham, MA: Brandeis University, Department of Psychology.

Levy, B., & Langer, E. (1999). Aging. In M. A. R. S. Pritzker (Ed.), *Encyclopedia of creativity* (pp.45-52). New York: Academic Press.

Schaie, K. W. (2005). *Developmental influences on adult intelligence: The Seattle*