

Examination of Personality-Ability Relationships in the Elderly: The Role of the Contextual (Interface) Assessment Mode

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Personality-ability relationships in old age were examined in 71 elderly persons. Two modes of assessment were used. One consisted of measuring intellectual abilities (17 tests) and personality (6 dimensions) by means of established instruments. Intellectual abilities covered were drawn from Horn and Cattell's model of psychometric intelligence. Personality dimensions included three measures of locus of control and one measure each for achievement motivation, anxiety, and morale. The second mode of assessment was aimed directly at the interface between cognitive abilities and personality. Six such interface (context-specific) scales, involving self-assessment and attributions dealing with intellectual functioning in the context of aging, were developed using the six traditional (transcontextual) personality scales as conceptual criteria. These newly developed interface scales exhibit satisfactory convergent and discriminant validity with their transcontextual parent scales of personality. The six parent personality measures and the six personality-ability interface scales were correlated, sep-

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arately, with performance scores of psychometric intelligence. Relationships between the two domains (personality, ability) were substantial and of greater magnitude when personality was assessed in the context of the personality-ability interface. Because of the conjoint anchoring of the interface scales to both personality and ability, the findings provide a basis for beginning to clarify the nature of personality-ability relationships in old age. In addition, the results support the continuation of a measurement approach to the study of interdomain relationships that includes the use of direct assessments of the domain interface, in addition to traditionally distinct measures of different domains.

This study is developed from three perspectives. First, it is an effort to elucidate cross-domain relationships between intelligence and personality in old age, a largely unexplored area of research. The second perspective involves the examination of personality-ability relationships as a function of the strategy (transcontextual versus context specific) of assessment. The third perspective deals with self-perceived intellectual competence as one specific approach to examining the interface of personality and ability.

As to the first perspective, the study of personality-ability relationships in aging, there is a longstanding tradition among trait psychologists to specify the nature of personality and ability relationships (Cattell, 1945, 1971; Eysenck, 1970; Heim, 1970). The bulk of the past work on personality-ability relations, however, has been carried out with children and young adults (Anthony, 1973, 1977; Barton, 1976; Cattell, 1971; Hakstian & Cattell, 1978; Horn, 1977; Turner, Willemann, & Horn, 1976) and has been focused on school-related achievement and subsequent occupational success. There have been only a few efforts to identify patterns of personality-ability relationships in advanced adulthood and old age (e.g., Costa, Fozard, McCrae, & Bossé, 1976; Powell & Centa, 1972). Significant relations were reported, but the results were negligible given the large number of variables and the relatively low magnitude of correlations. As in other areas of research, it is open to question whether the relatively low cross-domain correlations reported are indicative of the true structural "independence" between personality and intellectual abilities, or whether they reflect measurement issues as discussed next.

The second theme associated with this study involves questions of measurement. This theme can be cast in the framework of transcontextual versus context-specific assessment. For the present study, there are two subissues. The first is the general topic of contextual measurement; the second is the more specific one of age-appropriate assessment. Conceptually, the emphasis on contextual measurement is related to a number of current trends, including positions of interactional psychology (Bowers, 1973; Magnusson & Endler, 1977; Mischel, 1973, 1979; Pervin & Lewis,

1978). A central focus of interactionist researchers has been on revising or developing assessment devices to include contextual or situational dimensions (Hogan, Solano, & DeSoto, 1977; Lefcourt, 1979). For example, in the area of anxiety, a number of self-report personality instruments that reflect specific concern with context have been developed and used in conjunction with traditional measures to study anxiety-behavior relationships (Endler & Okada, 1975; Kendall, 1978; Spielberger, 1977). In our view, this call for context-specific, in addition to transcontextual, measurement applies equally well to the study of personality-ability relationships in old age. In general, research on aging is often based on instruments which have been developed for the young adult and, therefore, do not include consideration of the context in which aging occurs (Baltes & Willis, 1979; Schaie, 1978).

The third perspective associated with this study involves the question of how it is possible to focus directly on the interface between domains (such as personality and ability) rather than primarily on the linkage between separate domains. Two trends illustrate this conceptual effort. One is (largely childhood based) work on metacognition and metaintelligence. Researchers in this area (e.g., Brown, 1978; Flavell & Wellman, 1977) have made the distinction between actual cognitive performance ("knowing") and the more subjective prediction about or attributions of performance ("knowing about knowing"). Self-assessments of performance related to cognition, as defined in the metacognition field, include both personality and cognitive dimensions such as confidence in one's ability, accuracy in predicting performance, knowledge about problem solving strategies, and anxiety about and motivational interest in performance. This trend in metacognition is related to a second one that originates primarily in the field of personality research (e.g., Mischel, 1979). Here, with a focus on the reciprocal relationship between personality and cognitive functioning, researchers have increasingly concerned themselves with such variables as locus of control and self-efficacy (Bandura, 1977; Lefcourt, 1979; Reid, 1977; Ryckman, 1979) and their relationship to performance.

The present study combines features from the three perspectives outlined to examine personality-ability relationships in old age. In one mode of assessment, selected measures of cognitive abilities and personality are indexed by means of traditional methods developed for separate assessment of those domains. In another mode, a new set of personality-related variables is introduced that is explicitly oriented towards the interface of personality and ability. The substantive measurement focus of these variables is context specific and reflects conjointly the three perspectives outlined above. Substance of measurement is provided by three contextual dimensions: (a) intelligence-related tasks and situations;

(b) aging; and (c) knowledge and feelings about intellectual competence. It is somewhat arbitrary how these new variables are labeled because they represent aspects of both personality and ability. Because the variables are developed using the traditional personality scales as a criterion, however, we prefer to label these new scales as measures of personality in the context of intellectual aging. Specifically, a new instrument, the Personality in Intellectual-Aging Contexts (PIC) inventory, was developed for research purposes.¹ This research instrument, constructed for use with older persons, assesses beliefs and attributions related to the person's own intellectual functioning. The assessment framework is a set of established personality dimensions (locus of control, achievement motivation, anxiety, and morale).

It is our expectation that context-specific measures of personality will be more strongly related to older adults' performance on intelligence tests than would be true for more general personality scales. Such an outcome would also illustrate that an interface between personality and ability has been established. The existence of substantial interdomain relationships is desirable for further analytic work on the role of personality in intellectual aging.

METHOD

The intelligence testing and personality assessment were conducted in 1977-1978. Ability measures were given in Summer 1977; personality instruments were administered in April 1978.

Subjects

Ninety-six older adults participated in various phases of the study. The sample (17 males and 79 females) had a mean age of 69.2 years (range = 60-89 years) and a mean educational level of 11.8 years (range = 6-19 years). Health of the sample was assessed by self-rating on a 6-point scale, ranging from excellent (1) to very poor (6). Older adults' self-ratings of health have been shown to be reasonably accurate when compared with physician's ratings (Lafuze, Bank, Jarvik, & Heland, 1979). The mean health rating for this sample was 2.03 ($SD = .95$), indicating that, on the average, health was good. Subjects also reported having adequate hearing and vision.

The participants were recruited through various community organizations in central Pennsylvania, such as church groups, congregational meal sites, and senior citizen centers. Participants were tested in groups of between 4 and 12 persons at their respective center locations and were paid a small sum for participating in four sessions. Compared with national cohort-specific norms, this sample is rural and positively selected in terms of educational background.

Intellectual Ability Test Battery

The ability assessment battery included 17 tests marking primarily fluid (GF) and crystallized (GC) intelligence. This battery was compiled for cognitive training research with

¹ Development of an intelligence- and aging-specific measure of personality was also suggested by another goal of ADEPT, that is, to examine in future research the effects

older adults (Bates, Cornelius, Spiro, Nesselroade, & Willis, 1980). The scope of the battery is representative of the fluid and crystallized domains in Cattell and Horn's theory of psychometric intelligence (Cattell, 1971; Horn, 1970, 1978). Total administration time is approximately 7.5 hr. Testing was conducted in three 2.5-hr sessions, which in most cases were scheduled on consecutive days; the longest time span for the three sessions was 10 days.

Confirmatory factor analyses were performed to test the ability pattern associated with the test battery in our older subjects (Bates et al., 1980). These analyses resulted in a number of acceptably fitting solutions. In general, the factor patterns obtained were more integrated (versus differentiated) than is typical for younger age groups. Information about the ability structure on which the present analyses were based is provided in Table 1. It

TABLE 1
FACTOR PATTERN OF PSYCHOMETRIC INTELLIGENCE IN OLD AGE AND ASSOCIATED TESTS

Test	Factor loading				Unique variance
	I	II	III	IV	
Culture Fair	.92				.16
Figural Relations Diagnostic	.87				.24
Raven's Progressive Matrices	.75				.44
Induction Diagnostic	.58			.37	.19
Induction Standard	.89				.21
Visual Number Span		.76			.42
Auditory Number Span		.88			.22
Auditory Number Span (delayed recall)		.85			.29
Verbal Analogies	.66				.57
Word Matrix	.62				.62
Social Translations	.80				.36
Social Situations	.40		.43		.39
Verbal Meaning		.99			.02
Vocabulary		.94			.11
Finding A's				.70	.51
Number Comparison				.81	.34
Identical Pictures		.26		.59	.44

Factor intercorrelations

Factor	Factor			
	I	II	III	IV
I Reasoning	1.00			
II Memory span	.62	1.00		
III Crystallized knowledge	.79	.62	1.00	
IV Perceptual speed	.78	.46	.71	1.00

Note. Factor interpretations are: (I) General Reasoning, (II) Memory Span, (III) Crystallized Knowledge, (IV) Perceptual Speed. (From "Integration Versus Differentiation of Fluid/Crystallized Intelligence in Old Age" by P. B. Bates, S. W. Cornelius, A. Spiro, J. R. Nesselroade, & S. L. Willis, *Developmental Psychology*, 1980, 16, 625-635. Copyright 1980 by The American Psychological Association.)

contains four intercorrelated (oblique) ability factors labeled General Reasoning, Memory Span, Crystallized Knowledge, and Perceptual Speed. In our judgment this pattern of abilities represents a fairly broad and reliable assessment of psychometric intelligence with particular attention to structural properties of intelligence in old age.

Personality Instruments

The personality measurement battery, which was administered in one session approximately 2 hr in length, included both the established transcontextual and the newly developed context-specific or interface assessment devices. The choice of personality dimensions was based on conceptual and empirical evidence of relationships with intellectual variables (e.g., Cattell, 1971; Powell & Centa, 1972; Turner et al., 1976). The personality dimensions selected are Locus of Control, Achievement Motivation, Anxiety, and Morale.

Transcontextual measures. Four standardized measures were selected to be the transcontextual indicators of personality dimensions selected for investigation. Locus of Control was identified by Levenson's (1974) multidimensional measure. This scale includes three Locus of Control scales of eight items each: Internal, Chance, and Powerful Others. A trait measure of Achievement (16 items) was selected from Jackson's (1974) Personality Research Form (PRF-Form E). The domain of Anxiety was marked with the State Anxiety Scale (Form A with 20 items) constructed by Cattell and Nesselrode (1974). Finally, in order to obtain an assessment of Morale in the context of aging, the subscale on Attitudes Toward Own Aging from Lawton's (1975) Philadelphia Geriatric Center (PGC) Morale Scale (five items) was used.

Personality-ability interface scales. A new research instrument, tentatively labeled the Personality in Intellectual-Aging Contexts (PIC) inventory, was developed to assess aging- and intelligence-specific manifestations of the transcontextual personality scales. The definitions of the transcontextual personality dimensions served as models for conceptualization of the context-specific dimensions. Thus, the specification of the new context-specific dimensions reflect the "parent" personality dimensions on a general conceptual level, yet their content is more narrowly concerned with intellectual behavior and aging (see Table 2). The instrument was designed to cover both self-assessments of intellectual competence and beliefs and attributions about intellectual functioning associated with everyday situations or laboratory tasks. Selection of situations was facilitated by a series of unstructured, in-depth interviews with older persons aimed at identifying the scope of situations in which older persons experience intelligence-related demands.

Items were developed to include content related to intellectual aging and one of the six personality dimensions (Locus of Control: Internal, Chance, Powerful Others; Achievement: Anxiety; Morale). Eight graduate students or research assistants not involved in the generation of the items functioned as judges of content appropriateness. They classified a total of 158 items into six target groups indexed by the definition of the six personality domains (see also Table 2). Items ($N = 138$) receiving at least 60% agreement with the criterion classification were retained in the pool. The three locus of control scales involved evaluations of capabilities and attributions about control over intellectual processes. The achievement scale is concerned with the importance or meaning associated with intellectual competence. Anxiety assesses affective reaction to intellectual tasks. Attitude toward intellectual aging deals with the degree of perceived change in intellectual competence with age.

Subsequently, analyses were conducted to identify and eliminate items that showed (a) higher intrascale/total than intrascale/total correlations; or (b) the lowest intrascale/total correlations. The resulting six interface scales are comprised of 12 items each. The 72 items were randomly ordered across subscales and presented in a 6-point Likert response format with the following six anchors: Strongly Agree, Agree, Slightly Agree, Slightly Disagree, Disagree, Strongly Disagree.

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TABLE 2
CONCEPTUAL FRAMEWORK FOR DEVELOPMENT OF THE PERSONALITY IN INTELLECTUAL-AGING CONTEXTS (PIC) INVENTORY: EXAMPLES OF ITEMS

Personality dimensions	Transcontextual parent personality scales	Intellectual-aging Context-specific PIC Scale: interface definitions and item examples
Locus of Control	Levenson Locus of Control (1974): Internal	Responsibility for modifications or maintenance of intellectual functioning lies within one's own control (e.g., If I studied a map carefully, I could figure out how to get around in a strange place. It's up to me to keep my mental faculties from deteriorating). Belief that there is nothing that can be purposefully done to preserve or modify intelligence; change in abilities is inevitable or due to external forces (e.g., My crossword puzzle skills will go downhill even if I keep doing puzzles; I have little control over my mental state).
	Powerful Others	Dependence on and reliance on other people for accomplishing intellectual tasks, due to the belief that others are better able to carry out such tasks (e.g., I can't figure out sale prices of items unless someone helps me; I wouldn't be able to figure out postal rates on a package without the postman's help).
Achievement Motivation	Jackson PRF-E (1974): Achievement	The desire to try and accomplish cognitive tasks; interest in trying new activities and to be competent in intellectual pursuits (e.g., It means a lot to me to be able to write coherent letters to my friends and relatives; I really don't care whether or not I learn anything new).
Anxiety	Cattell-Nesselrode State-Trait Anxiety Battery (1974): State Anxiety	The degree of comfort or uneasiness usually encountered in intellectually oriented situations, including test-taking (e.g., I feel clear headed and ready for any kind of test at this moment; When I have to make a quick decision I remain calm and collected).
Morale	Lawton PGC Morale Scales (1975): Attitude toward Own Aging	One's opinion about current level of intellectual functioning relative to the past; beliefs about the nature and direction of change in one's own intellectual processes (e.g., I used to be much better at working with numbers; I can learn new things as well as always).

Relationship of interface scales with personality scales. Summary correlational information on the psychometric properties of and the relationships between transcontextual and context-specific personality scales is contained in Table 3. This information is important because it demonstrates the extent to which the personality-ability interface scales exhibit sufficient convergent validity with their parent personality scales to be considered personally related.

The data presented are based on the sample of older persons ($N = 96$) described earlier. The reliability estimates in the main diagonal of Table 3 are alpha coefficients (Cronbach, 1951). All interface scales show acceptable levels of reliability ranging from .76 to .91. In most cases, the contextual (interface) scales demonstrate higher internal consistency than the transcontextual scales. In research in progress, comparable reliability estimates are being found with new samples of older adults.² The stability (test-retest correlation) of all PIC measures is also fairly high. Five-month retest stabilities of the PIC scales, based on a sample of 54 older adults, range from .74 to .88. This information suggests that the contextual scales, like their parent transcontextual scales, reflect trait properties.

Since the PIC scales were constructed to be contextual counterparts to transsituational "parent" scales, a substantial degree of convergence between "like traits" across the two measurement modes was expected. To examine relationships among the scales, a multi-trait-multimethod matrix was computed (Campbell & Fiske, 1959) with the transsituational parent scales and the context-specific PIC scales treated as two methods. A 6-trait \times 2-method correlation matrix resulted.

As shown in Table 3, the pattern of correlations is, by and large, in line with the expected pattern of convergent and discriminant validity. First, note that, with regard to convergent validity (lower left diagonal), the parallel parent and contextual interface scales exhibit correlations of moderate magnitudes ranging from .35 to .49 (average correlation = .40). In contrast, the correlations between scales measuring different traits were in almost all cases of lower magnitude. This finding is indicative of discriminant validity, both within and across methods. Two deviations from the desired pattern occur: for Powerful Others (.48 with Chance) and Morale (-.44 with Anxiety). This outcome can in part be explained by the equally high correlations between the corresponding intercorrelation matrices for the angle). Furthermore, comparisons of the monomethod intercorrelation matrices for the parent and contextual measures revealed highly similar patterns of trait intercorrelations in terms of relative magnitude and direction. This gives further evidence of convergent validity between parent and context-specific measures in terms of their structural relationships to the remaining scales in their respective measurement framework.

One additional finding emerged as anticipated. It was expected that because of the situational specificity in common to contextual measures (both in terms of context and instructional mode), the intercorrelations among PIC scales would be high and greater than those found among the parent scales. In fact, the intercorrelations among PIC scales (lower right triangle) were generally of higher magnitude (average correlation = .39) than those among parent scales (upper left triangle, average correlation = .21). This finding suggests a more integrated structure of PIC scales; however, the outcome may be in part due also to the higher reliabilities obtained for the newly constructed PIC scales than for the transcontextual parent scales.

We interpret the findings on the relationships between parent personality scales and interface scales in the following manner. In line with our expectation, the outcome suggests

² These additional data are based on 146 older adults who have participated in other ADEPT training research. A subsample ($N = 54$) of these 146 elderly persons provided also the 5-month stability information reported in the text. Comparable levels of reliability and stability values also have been found in a sample of 101 college students.

TABLE 3
MULTITRAIT-MULTIMETHOD MATRIX RELATING TRANSCONTEXTUAL TO PERSONALITY-RELATED INTERFACE SCALES OF PIC^a

Method	Transcontextual, method 1						Contextual, method 2						
	Traits	A1	B1	C1	D1	E1	F1	A2	B2	C2	D2	E2	F2
Transcontextual method 1													
Locus of Control: Internal	A1	.61 ^b											
Locus of Control: Chance	B1	-.03	.70										
Locus of Control: Powerful Others	C1	-.02	.49	.72									
Achievement Motivation	D1	.07	-.07	-.08	.66								
Anxiety	E1	-.23	.33	.25	-.28	.86							
Morale: Attitude toward Own Aging	F1	.07	-.30	-.22	.27	-.42	.70						
Contextual method 2													
Locus of Control: Internal	A2	.40	-.21	-.08	.24	-.37	.21	.84					
Locus of Control: Chance	B2	.02	.49	.48	-.15	.25	-.28	-.14	.76				
Locus of Control: Powerful Others	C2	-.12	.32	.36	-.26	.30	-.06	-.38	.50	.76			
Achievement Motivation	D2	.25	-.22	-.20	.35	-.33	.26	.66	-.15	-.39	.78		
Anxiety	E2	-.24	.37	.23	-.28	.45	-.18	-.34	.38	.58	-.33	.91	
Morale: Attitude toward Own Aging	F2	.15	-.26	-.19	.33	-.44	.35	.34	.58	-.43	.27	-.44	.83

^a Values greater than .20 and .25 are significant at the .05 and .01 probability levels, respectively.

^b Coefficient alpha estimates of reliability.

that construction of the contextual scales was reasonably successful when it comes to the first criterion, that of relatedness to personality. Scales aimed at self-assessment of and attributions about intellectual aging have acceptable psychometric properties in that they exhibit satisfactory reliability and stability. Second, the contextual interface scales show a good degree of convergent and divergent relatedness to their parent personality scales. Although the evidence for convergent versus divergent validity deviates somewhat from the ideal, the pattern is in line with our general expectations and sufficient to warrant the conclusion that the contextual interface scales are personality related and discriminative.

RESULTS

The major objective of this study was to test whether ability measures are more saliently related to context-specific interface measures than to transcontextual personality scales. In other words, since the PIC was constructed to measure personality in intellectual contexts relevant for old age, it was expected that the PIC scales would be more highly correlated than transsituational personality measures with intellectual test performance.

Only data from those subjects with complete records ($N = 71$; 16 males and 55 females) were included in the analyses of personality-ability relations. Personality scores were based on raw scores of the transcontextual and context-specific interface scales. For abilities, factor scores were estimated for each subject for each of the four factors described in Table 1. This was done by forming a linear combination of unit-weighted, standardized test scores for those tests with salient loadings on each factor. Subsequently, relations between the two domains (personality, ability) were examined via canonical and bivariate correlational analysis. Because of a lack of appropriate theory and research in the area, no specific hypotheses about the differential magnitude of individual cross-domain correlations were formulated.

Canonical Correlation

Initially, separate canonical correlations were computed between the ability factors and each of the sets of personality variables—the transcontextual and contextual personality measures. This statistical technique, which provides a test of the independence of two domains (personality, ability) of measures, was performed as an omnibus test. For the analysis relating transcontextual personality and ability dimensions, the test of the first canonical correlation revealed no significant linkage between the two sets of variables ($p = .54$; $\chi^2(24) = 45$, $p < .08$). For the contextual personality-ability analysis, however, the first canonical correlation was found to be statistically significant ($p = .62$; $\chi^2(24) = 48.9$, $p < .002$). None of the remaining canonical correlations were significant.

Bivariate Correlational Analyses

Guided by our theoretical interest in examining personality-ability relations separately for each measure and by the finding of a significant canonical correlation in the case of interface measures (as well as a trend toward significance for the transcontextual measures), subsequent correlational analysis was done at the scale level.

In Table 4, the outcomes of bivariate personality-ability correlational analyses are presented. Consistently, the product-moment correlations among PIC scales and ability factor scores were higher than the counterpart correlations between the transcontextual parent scales and the ability factors. Twenty of the 24 possible correlations linking context-specific measures to ability factors were significant at the .01 level, whereas only two of the possible 24 transcontextual correlations with ability factors reached significance at the same level of confidence. A nonparametric sign test further confirmed that the overall correlation matrix of context-specific personality scales to ability factors was significantly different ($p < .001$) from the matrix relating transcontextual to ability factors.

In order to determine the extent to which these results were a function of differential reliability of the transsituational and contextual scales, the correlations were corrected for attenuation. These corrected correlations are presented in parentheses in Table 4. Adjusting for unreliability of the personality scales does not alter the picture a great deal. Although two more transcontextual-ability correlations become significant at the .01 level, the context-specific interface scales continue to maintain more substantial and consistent relations with the ability factors.

The similarity of findings across the four abilities is in part a function of the high correlations among the ability factors (Table 1). Correlations with each of the ability factors are presented so as to be consistent with other research on intelligence in old age that emphasizes multidimensionality (Horn, 1970, 1978). The Baltes et al. (1980) analysis of the factor patterns associated with the ability tests used, however, includes a factor solution involving a general factor as well. When the personality and interface scales were correlated with scores on a general factor of intellectual ability, the outcome was similar. All six interface scales retained significant ($p < .01$) correlations with the ability factor. In addition, one of the six transcontextual scales (Powerful Others $r = .31$) reached a statistically significant level of correlation.

Interface measures of the personality-ability relationship, then, while maintaining a satisfactory level of convergent validity with their transcontextual parent scales, exhibit salient cross-domain (personality-ability) relationships. In terms of direction and magnitude, the relationships found are consistent with intuitive expectations and previous research.

TABLE 4
COMPARISON OF CORRELATIONS OF ABILITY FACTOR SCORES WITH TRANSCONTEXTUAL AND CONTEXT-SPECIFIC PERSONALITY-RELATED INTERFACE SCALES^a

Personality scale	Ability factor			
	I General reasoning	II Memory span	III Crystallized knowledge	IV Perceptual speed
Personality-related interface scales				
PIC Internal	.34* (.36)*	.31* (.33)*	.34* (.36)*	.25 (.27)
PIC Chance	-.30* (-.33)*	-.23 (-.25)	-.48* (-.53)*	-.28 (-.31)*
PIC Powerful Others	-.51* (-.58)*	-.34* (-.39)*	-.54* (-.61)*	-.45* (-.51)*
PIC Achievement	.36* (.39)*	.34* (.37)*	.40* (.43)*	.33 (.35)*
PIC Anxiety	-.39* (-.41)*	-.33* (-.34)*	-.40* (-.42)*	-.34* (-.35)*
PIC Attitude toward Own Aging	.31* (.34)*	.36* (.39)*	.35* (.38)*	.24 (.26)
Transcontextual personality scales				
Internal (Levenson)	.22 (.27)	.27 (.33)*	.21 (.26)	.07 (.09)
Chance (Levenson)	-.23 (-.28)	-.12 (-.15)	-.27 (-.33)*	-.06 (-.07)
Powerful Others (Levenson)	-.30 (-.36)*	-.21 (-.25)	-.32* (-.39)*	-.20 (-.24)
Achievement (Jackson)	.11 (.17)	.17 (.26)	.18 (.28)	.07 (.11)
Anxiety (Cattell-Nesselrode)	-.22 (-.23)	-.24 (-.25)	-.19 (-.20)	-.15 (-.16)
Attitude toward Own Aging (Lawton)	.06 (.07)	.17 (.21)	.02 (.02)	.00 (.00)

Note. $N = 71$ older adults.

^a Values in parentheses represent correlations corrected for attenuation using odd-even split-half reliability estimate.

* $p < .01$. Values greater than .22 and .29 are significant at the .05 and .01 levels, respectively.

Internal Locus of Control, Achievement, and Attitude toward Own Aging exhibit positive correlations to abilities, whereas Chance Locus of Control, Powerful Others Locus of Control, and Anxiety are negatively related to abilities. Individually, context-specific, Powerful Others Locus of Control has the most salient relationships (corrected for attenuation: -.58, -.39, -.61, -.51, respectively). Finally, the general directional pattern of the personality-ability relationships is highly similar for the two modes of personality assessment, thereby giving further credence to the measurement strategy used.

DISCUSSION

The primary objective of this study was to examine personality-ability relationships in old age by contrasting the use of transcontextual with context-specific, personality-ability interface scales. For this purpose, a new research instrument suited to the assessment of intelligence-related personality characteristics in older adults was developed. This preliminary research instrument has satisfactory psychometric properties.

The findings obtained have several implications. First, there is the issue of mode of assessment, particularly as it relates to our notion of transcontextual versus context-specific interface assessment. The newly developed contextual scales resulted in expected outcomes with regard to relationships with personality and abilities. They are context-specific interface scales in the sense that they are simultaneously anchored to traditional personality and ability measures. The strong pattern of correlational relationships involving the contextual scales strengthens the general argument that the discussion of contextual versus transcontextual predictions is not a question of dichotomous conceptions but, rather, one of degree of contextual specificity appropriate for the task at hand. While Block (1977) has argued forcefully that, in general, substantial predictive relationships exist in personality research if measurement reliability is satisfactory, the present results supplement Block's perspective with the notion of adequate contextual measurement. Thus, using the present situation as a sample case and the work summarized in Magnusson and Endler (1977) as a rationale, we believe that the findings can be used to support the idea that interdomain relationships (involving personality and ability) can be studied usefully if one uses assessment instruments that are explicitly designed to tap personality functioning in contexts relevant to the outcome variables, in our case intellectual ability and intellectual aging.

In order to be programmatic and supportive of a cumulative approach to science, the development of personality-related interface measures, however, needs to maintain linkage with transcontextual measures. In our research example, this was approximated by demonstrating a fair

degree of convergent validity between newly developed contextual interface scales and their parent measures of transcontextual personality functioning. The authors intend to continue this line of research aimed at representing personality at different levels of aggregation or analysis. Focus will be on the development of additional contextual scales associated with those transsituational personality scales that are potentially relevant for the study of psychological aging and personality in other contexts. We are also in the process of designing research to assess transfer of cognitive intervention, not only to intellectual ability, but also to personality. It is our prediction that such transfer from cognitive training to personality might be demonstrable for the case of the contextual interface between personality and ability (PIC scales), but not for their counterpart transsituational personality scales.

As to the usefulness of contextual assessment of personality, what are the implications of the present findings for the study of aging? There are two, one related to personality-ability relationships, the other to the older person's capacity for self-evaluation involving intellectual functioning. With regard to the study of personality-ability relationships in aging, the following observations are offered. Similar to past research with other samples, including older adults, empirical relationships between transcontextual personality measures and a battery of ability tests resulted in relatively few and fairly low cross-domain correlations. Contrariwise, use of counterpart context-specific but personality-related measures yielded consistent and substantial correlations with a broad battery of ability measures. The existence of cross-domain correlations is desirable for further research on personality-ability relationships in old age, particularly in light of the fact that there is convergent validity between transsituational and contextual personality scales. Detection of salient relationships is a necessary prerequisite to the articulation of antecedent and consequent processes associated with intellectual and personality functioning in later life.

In concert, these findings on the interface between personality and ability in the elderly suggest certain personality dimensions (such as locus of control, anxiety, and achievement orientation) to be of central importance in the study of intellectual aging. The use of transcontextual personality scales alone would not have suggested such a view. Moreover, the finding of a substantial linkage suggests more specific hypotheses for future research. Such future research would be aimed at analysis of relevant change processes and directional evaluation of cause-effect sequences. For example, the finding of substantial relationships between intelligence-related locus of control and performance on intelligence tests (positive for Internal, negative for Powerful Others) is promising as it links the present findings with previous research on

helplessness and perceived control (Abramson, Seligman, & Teasdale, 1978; Nicholls, 1979; Reid, 1977; Ryckman, 1979). Longitudinal research is in progress to examine such causal linkages using the present assessment instrument with its focus on contextual assessment.

There is another related implication which is derived from considerations of the role of metaintelligence. As mentioned in the introductory section, researchers, particularly in child development (Brown, 1978; Flavell & Wellman, 1977), have begun to consider whether persons of different ages can predict or evaluate accurately their performance on laboratory tasks or other intellectual tests. Similarly, Bandura (1977, 1982) emphasizes the role of self-assessment of performance as an important process involved in self-efficacy. Since the personality-ability interface scales used in this study include a component of self-assessment, the results can be used to suggest that elderly persons are capable of self-evaluation of cognitive performance. In this sense, the present results are supportive of other metacognitive research (e.g., Perlmutter, 1978) that has found older adults to be fairly accurate in their estimations of their own performance.

The last observation, however, also points to perhaps the most serious limitation of the present study and the need for improvement in future work. The context-specific interface scales used in this study do not permit a clear separation of self-assessment of intellectual functioning from attributions and beliefs about the origins (determinants) of intellectual performance and changes therein. This distinction has become an important one in research on the role of personality-related cognitions in determining performance (Abramson et al., 1978). Thus, whereas we have advanced the general position that assessing the interface between personality and ability is a virtue, we believe also that such assessment may be approached in different ways. Examination of the relationships between personality and ability will likely be more useful if researchers distinguish between perceived competence and attribution of causation. Therefore, we recommend that in future research this and other differentiations be attempted as the interface between personality and ability functioning continues to be explored.

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