DEVELOPMENT OF THE ECOLOGICAL Q-SORT: A SELF CONCEPT INSTRUMENT FOR USE WITH THE ELDERLY

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Attempts to measure self concept in the elderly have been characterized by a variety of differing definitions of self concept, and differing methodological procedures. Previous investigations have used instruments which are stereotypic and not ecologically valid for elderly, test formats which make excessive demands on some elderly persons' cognitive and sensory-motor abilities, and administration procedures which penalize the less psychologically sophisticated older person, factors precluding adequate assessment of self concept in the elderly.

In order to address the limitations of previous research, the present investigation developed and tested the Ecological Q-sort, a self concept instrument designed especially for use with the elderly. Items for the Ecological Q-sort were life situations which were ecologically representative and meaningful for older persons as self-defined by them. Two forms of the Ecological Q-sort were developed: the pictorial form consisting of pictorial representations of situations plus one sentence descriptions of situations; another form consisted of only one sentence written descriptions of situations.

Correlational analysis indicated several sources of support for construct validity of ecological measures. Scores computed from ecological Q-sorts demonstrated hypothesized relationships with nonecological measures. Several scores showed theoretically predicted correlations with nonecological measures, and measures of depression, anxiety, and life satisfaction. Multivariate analysis of variance indicated that for measure of depression, only ecological Q-sorts showed significant differences between groups split at their respective medians. Results provided support for the construct validity of the ecological Q-sort and suggested further research and development was warranted.

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Studies of personality across the lifespan, including studies of personality in the aged, continue to recognize self concept as a variable of significance both in the explanation of and in the prediction of behavior and psychological functioning (Wylie, 1971; Wylie, 1974; Wylie, 1979; Birren & Schaie, 1977; Breytspaak & George, 1979). With respect to studies of personality in the aged, self concept has been investigated from several different perspectives. As Breytspaak and George note, self concept has been studied as both a predictor variable and as a correlate of other variables.

While some studies have investigated self concept as a predictor of such variables as life satisfaction (Chown, 1977; Tellon, 1976), adaptation (Clark & Anderson, 1967; Chown, 1977), other studies have investigated correlates or predictors of self concept such as altruistic behavior (Trimakas & Nicolay, 1974), life satisfaction and locus of control (Nehrke, Hulicka & Morganti, 1980), age (Bloom, 1961; Grant, 1969; Mason, 1954; Monge, 1975; Ward, 1977), and living arrangements (Postema, 1970). Still other approaches include studies which have investigated age related changes in self concept (Nuegarten, 1977).

As may be seen from this brief overview, interest in the self concept as a research variable has not been lacking. Indeed, the research has been characterized by numerous attempts to develop alternate ways of conceptualizing self concept, and by attempts to investigate new relationships with other variables (for a review see Breytspaak & George, 1979). However, an important facet of studies of self concept, and a facet which has received comparatively less attention, is the measurement of self concept in the aged.

Attempts to measure self concept in the aged have been characterized by the use of a variety of differing approaches to conceptualization of the self concept, by differing methodological procedures, and by the use of a variety of instruments (Breytspaak & George, 1979; Wylie, 1974; Seltzer, 1975). In reviewing previous research on self concept in the elderly, one of the generalizations to be made is that based on the current state of the art, one cannot make statements of any certainty regarding self concept in the elderly. The presence of numerous equivocal or inconsistent findings and the related lack of a sound empirical base from which to make statements is in part due to factors which preclude the adequate and accurate assessment of self concept in the elderly.

The factors which preclude adequate and accurate assessment refer primarily to the methodological and conceptual limitations inherent in previous studies. These limitations include 1) the almost exclusive use of cross-sectional

designs comparing younger versus older people, 2) use of self concept instruments which are sterotypic and which are not ecologically valid for elderly people, 3) use of test formats which may make excessive demands on some elderly person's cognitive and sensory-motor abilities, 4) use of tests and administration procedures which penalize elderly persons who are less psychologically sophisticated, 5) lack of age appropriate norms and lack of reliability and validity data for existing self concept instruments, and 6) lack of regard for situational factors which may affect the elderly person's self concept.

Because previous investigations have been hindered by numerous shortcomings and have not produced an instrument which meets the requirements considered necessary for the adequate measurement of self concept in the elderly, the purpose of the present investigation was to develop such an instrument. Specifically, the present investigation attempted to develop a self Q-sort instrument, the ecological Q-sort, consisting of items which are descriptions of life situations which are ecologically valid for the elderly.

Based upon the limitations listed above, it becomes apparent that an adequate approach to measurement of self concept in the elderly, one which will address the aforementioned limitations, must include efforts on several levels. At the methodological level would be considerations of design, instrumentation, and administration procedures. Cross-sectional

designs should be avoided in favor of designs which would focus on description of cohorts of elderly people. In terms of instrumentation, there are several recommendations. First, item selection and item content should reflect no negative stereotypes of the elderly. Moreover, selectional procedures should attempt to insure ecological validity of the items for elderly persons. This might best be assured by using items which have been derived from self reports of elderly. Secondly, the test format of test booklets should be less complex, containing fewer or less elaborate directions. Third, considerations should be given to the person's educational background and his/her motivational factors related to testing. This consideration might take the form of designing tests which are less psychologically sophisticated and less threatening. Fourth, efforts should be directed at developing appropriate age norms, and collecting reliability and validity data. In terms of administration procedures, attention should be given to providing clear and perhaps individualized instructions as much as possible in order to be sensitive to the elderly person who is experiencing cognitive or sensory-motor deficits, or the elderly person who sees the test as threatening and anxiety producing.

At the theoretical level, two related factors seem to be of importance. First, the emphasis should be placed on the ecological factors the elderly person faces. That is, the

focus of attention should be placed upon person-environment interactions and the situational or contextual factors which may be operating to influence self concept. Although interest in ecologically oriented inquiry has developed throughout several topic areas in psychological inquiry (Gibbs, 1979), ecologically-oriented inquiry is of special significance for studies of the aged. As Schaie (1978) has noted, the relevance of any given task may change as the individual's situational context changes. The elderly person may face a number of events which could alter their situational context (i.e., retirement, loss of significant support systems, sensory-motor changes, institutionalization, illness). Furthermore, as Scheidt and Schaie (1978) note, effective behavioral functioning is assumed to be related to the situational demands being made upon the individual. Thus, it becomes imperative to identify the person-situation interactions which may effect self concept and behavior. Secondly, because the topic of self concept in the elderly has as yet received very little theoretical treatment by traditional theories of personality (Storandt, Siegler & Elias, 1978) efforts should be directed at a conceptualization of self concept in the elderly. Specifically, this effort in conceptualization should be directed toward including effects of situational factors upon the self concept.

With respect to the conceptualization and operational definition of self concept, it should be noted that many

of the previous investigations of self concept have been theoretically based in self theory (Rogers, 1975), with self concept being defined in terms of the "way in which the individual views himself" (Mason, 1975) or in terms of the individual's phenomenal self. Consequently, self concept has usually been measured through ratings of personality characteristics. While such phenomenological approaches have strength in being sensitive to the individual and within individual differences, these approaches appear to have neglected one important aspect of phenomenological or self theory. They have neglected to consider the individual's perceptions of themselves in relation to the environment. As Rogers (p. 498, 1951) notes, an integral aspect of the self structure is the effect of the person's interaction with the environment. With the elderly, it may be that the most significant factor determining self perceptions and behavior is the interaction between environmental demands and person characteristics. For a given elderly person, his/her self perceptions and behavior may be more determined by the fact that they have a visual decrement, which coupled with environmental factors (i.e., poor night lighting) prevents them from functioning in a satisfactory manner rather than their self perception of their independence. As Hayslip (1981) suggests, a great deal of situational and individual specificity (see also Bower, 1973) may be needed to adequately define and measure the self concept in old age. By including the aspect of interaction with the environment, it is possible to

utilize a phenomenological approach to describing self concept in the elderly while still being able to accommodate the effects of ecological factors upon the self concept. Thus, the present investigation proposed that self concept be defined as the "individual's view of themselves in terms of their relationship to their environment."

The proposal that self concept be defined in such an ecological-phenomenological manner has multiple implications for measurement of the self concept. Perhaps most immediately, such an ecological-phenomenological approach would require the measurement of the perceptions in the elderly person's phenomenol field which relate to how the person sees themselves in relation to the environment. Thus, one of the first requirements of this type of investigation would be that it sample characteristics which are relevant to the elderly person's life situation.

A second implication of an ecological-phenomenological approach is that knowledge about how the person sees him/herself in relation to his environment will enable certain descriptive statements and predictions to be made. Descriptively, such an approach would be more encompassing, would provide a picture of the person ecologically and would provide an indication of what is more contextually salient for the person. This knowledge would provide perhaps a better indication of the factors that might be operating to influence

an individual's self perception and behavior than simply using descriptions of personality characteristics. In terms of prediction, this approach might also provide information about the individual's psychological well-being or adjustment, whether the person is experiencing distress, and the need and directions of possible therapeutic interventions.

Beyond the theoretical considerations mentioned above the present investigation also suggested that certain methodological issues be addressed; those regarding sampling and administration procedures were discussed earlier. In terms of instrument design and development, the present investigation incorporated three primary criteria: 1) items should be ecologically valid for older persons, 2) a Q-sort methodology (Stephenson, 1954) should be used and 3) items should be represented in pictorial form. As Scheidt (1981) suggested, attempts to insure ecological validity in measurement should focus on developing instruments composed of cohort relevant items or events, items or events which are representative of the universe of items or events, items which possess ecological reliability (defined as "stability of occurrence" by Scheidt) and items which are functionally valid or meaningful for older persons. The present investigation used a sample of life situations developed by Hayslip and Mullins (1981). In their investigation, Hayslip and Mullins interviewed 50 retired males and females and asked these individuals to 1) identify and rate items from a list of life situations in terms of

their relevance and importance to feelings about self, 2) keep a diary of their activities for one week. Based on these sources of data, a list of 70 situations which met criteria for relevance, representativeness and stability of occurrence were then derived for use in the present investigation.

The present investigation also recognized that measurement of self concept in old age may require a special measurement methodology. As Baltes and Willis (1977), Maddox and Douglas (1974), and Botwinick (1978) note, elderly persons are more heterogenous than younger persons. This knowledge suggests that there will be more interindividual differences between elderly persons, which in turn seems to suggest that a more idiographic approach to the study of these persons is necessary. In addition, the present investigation is phenomenologically based with an emphasis on the ecological factors which effect the elderly person. Again, it would appear that a focus on within person variability is suggested. As Hayslip (1983) has suggested, a Q-sort method seems to satisfy the need for a more idiographic approach to measurement in the elderly.

The present investigation also attempted to develop and test two alternate forms of the ecological Q-sort. One form contained pictorial representations of the situations plus written description, the other form contained only the written descriptions of the situations. The pictorial Q-sort was developed in an effort to eliminate several sources of biases inherent in

many of the traditional written instruments. Lawton et al., (1980) note that many elderly find traditional instruments very threatening and anxiety producing, may tend to use more denial and may tend to use personality descriptions less than younger individuals. In addition, it has been documented that many elderly experience visual decrements (Comalli, 1970). Thus, as Darbes (1978) has indicated, the pictorial Q-sort may be much better suited for use with the elderly because, 1) such a measure presents a much less complex visual-cognitive task thereby minimizing performance demands that may interfere with assessment of self concept, and 2) because the pictorial Q-sort may be less threatening since the measure does not introduce personality labels or descriptions which tend to produce distorted responding in elderly persons.

In summary then, the purposes of the present study were to develop an ecological measure of self concept in the elderly and to examine differences between the ecological measure of self concept and nonecological measures of self concept. As Hayslip (1983) notes, the development of an ecologically valid measure of self concept would represent an instrument which is more behaviorally and situationally anchored, and would allow for greater understanding of the person-environment interactions effecting self concept in old age.

Much of the following literature review will chronicle the inappropriateness and questionable validity of traditional measures of self concept for use with the elderly. In addition

to issues regarding inappropriateness of item content and format, and questionable validity, one of the prime issues concerns the lack of ecological validity of traditional measures of self concept is especially important for elderly individuals who face multiple demands for adjustment in order to interact successfully with their environment. Not only do elderly individuals face external demands for adjustment such as relocation, retirement, loss of significant others, and institutionalization, as well as internal demands such as adaptation to cognitive, somatic and sensory-motor changes, they also face situations where external and internal demands may interact to produce adjustive demands of varying complexity and duration. The instrument that measures stable personality traits hardly seems adequate to assess the fluctuations and changes in self concept which may occur in conjunction with ecological factors.

Review of the Literature

Among early studies, Mason (1954) and Bloom (1961) reported investigations of self concept in the aged. Although not directed specifically at developing instruments for measuring self concept, these studies did represent efforts at reporting information on instrument development and reliability data.

In the earlier of these two studies, Mason (1954) defined self concept as the "way in which the individual views himself" and included measures of the phenomenal self such as positive and negative feeling about self, positive or negative affectively

toned reactions to figures with which the individual most readily identifies, and measures of the social self such as social competence, attitudes toward health, friends, work, economic security, religion, feelings of usefulness and feeling of happiness. In order to measure positive or negative feelings about self, Mason designed the self concept questionnaire based upon items from Fiedler's (1951) Q-sort statements and statements rated by three psychologists as being pertinent to the self concepts of the aged, Mason reported that the Self Concept Questionnaire consisted of 26 statements such as "I keep busy most of the time," "My health is as good as most people my age," and "I enjoy living now as much as I used to."

Several aspects of this study deserve comment. First procedures for selection of items in the Self Concept Questionnaire may have introduced sources of bias since psychologists made judgements as to the relevance of items for the older person's self concept rather than asking older people what was relevant to their self concepts. Secondly, the content of items in the questionnaire appeared to contain some negative stereotypes regarding age. The statement "My health is as good as most people my age," might be seen as implying the existence of decrements in the individual's health, or as implying the existence of generalized decrements in health attributable to the aged as a group. It is interesting and perhaps not too surprising to note that the results of this

study revealed that aged individuals viewed their self worth in a more negative manner than did younger adults, and that old age is associated with negative feelings of self worth. Finally, although Mason provided interrater reliability coefficients on ratings of the positive or negative tone of the questionnaire items, no other reliability or validity information was reported.

Bloom (1961) conceptualized self concept in self theory terms (Rogers, 1951), postulating that self acceptance and self rejection, aspects of the self concept frequently used as measures of personal adjustment, would change with the aging process. Specifically, it was hypothesized that self acceptance would decrease with age, and self rejection would increase with age. In order to measure these aspects of self concept, Bloom (1961) developed an adjective checklist based upon items which a group of psychologists, social workers, and physicians agreed would differentiate younger from older persons. The checklist consisted of 63 favorable or positive items and 32 unfavorable or negative items. The self acceptance score was defined as the total number of positive items attributed to the self, while the self rejection score was defined as the total number of negative items selected.

As with the earlier study done by Mason (1954), this study raises several questions concerning methodological and psychometric procedures. The procedure of allowing "experts" to select items without assessing the older individual's

judgements as to the relevance of items may have introduced some negative stereotypes of aging into the item pool. The possibility that the checklist contained negative stereotypes of aging seems to be more likely in view of the fact that the checklist was constructed so as to discriminate between younger and older persons. Psychometrically, one may question the appropriateness and value of a self concept instrument which is developed primarily to differentiate younger from older persons. Again, it is interesting to note that Bloom found that self acceptance decreased from age 50.

Additional comments concerning Bloom's study center upon the sample and upon the lack of reliability and validity data. A somewhat limited sample of older persons, 15 individuals age 50-59, and 15 individuals age 60-69 were used in the study. The small sample size and restricted age ranges used, may limit the generalizability of Bloom's findings. With respect to reliability and validity information, only split-half reliabilities for the ratings of positive and negative items were reported. No other reliability and validity was reported.

In another study which used an adjective checklist format to measure self concept, Hess and Bradshaw (1970) investigated the relationship between self concept and ideal self concept as a function of age. Hess and Bradshaw selected Gough's Adjective Checklist (Gough, 1960) based upon the availability of validity and reliability data for the instrument. Scores of self concept and ideal self concept consisted of ratios of

the total number of favorable adjectives checked to the total number of adjectives checked under instructions for self and under instructions for ideal self.

Several limitations seem apparent in Hess and Bradshaw's investigation. First, it is important to recognize that although the decision to use the Adjective Checklist, an instrument of more established validity and reliability, seems to represent a considerable psychometric improvement, no validity and reliability data or normative information specific to aged populations was reported. Thus, questions as to the appropriateness and construct validity of the Adjective Checklist for use with the elderly still exist. A second limitation of the Hess and Bradshaw study stems from the procedures used in the administration of the Adjective Checklist. All subjects were tested in groups of five to 30 subjects, and administrators were instructed to give subjects as little information as possible beyond that information included in the test booklet. As Lawton, Whelihan, and Belsky (1980) note, optimal procedures for testing the elderly include 1) making special efforts to insure that the rationale for testing has been understood, and 2) providing instructions which are consistent with the sensory and cognitive status of the individual. It appears unlikely that the procedures used by Hess and Bradshaw even approached what Lawton et al., would consider adequate.

Another limitation of the Hess and Bradshaw study is based upon the fact that the study utilized a rather small sample of

elderly individuals (N = 20), and a rather restricted age range, 55-65 years. A last point worth noting in regard to this investigation is that Hess and Bradshaw's results contradict these or earlier studies, notably those of Bloom and Mason. Specifically Hess and Bradshaw reported an increase in positiveness of self and ideal self with increasing age rather than decrease in positiveness of self concept as reported by Bloom and Mason. Hess and Bradshaw attributed these contradictory findings to the fact that the elderly subjects in their study were essentially normal, community living individuals with high educational and income levels while other studies were based on institutionalized and/or psychiatric patients. While their conclusions may have been accurate, it may also have been the case that the methodological limitations considered in this review were operating to produce the observed discrepancy.

Lewis (1971) used a somewhat different method of measuring self concept in investigating the consistency of self concept between older people who reminisced and those who were non-reminiscers. In this study, self concept was measured by administering a 48 item Q-sort which was based upon items from the Butler and Haigh Q-sort (Butler & Haigh, 1954), the MMPI, and from statements taken from recorded interviews with older people. The items comprising the final 48 item Q-sort were checked for their relevance to older people by two psychologists who were familiar with research on aging. Again, as was discussed

in the studies previously reviewed, there are several criticisms pertinent to the measurement methodology used by Lewis. In terms of the development of the items comprising the 48 item Q-sort used in the study, it must again be noted that no data was reported to indicate that the items were in fact relevant to older persons. To demonstrate actual relevance to older persons would require either normative data for older persons for each of the instruments from which items were taken, or the estimation of relevance made by older persons themselves. It should also be noted that this investigation (Lewis, 1971) was based upon a rather small sample of older persons (N = 24), and the only psychometric data reported for the 48 item Q-sort was a test-retest reliability coefficient which was based on a retest interval of only 30 minutes.

In a departure from the practice of developing a self concept scale specifically for use in a given study, Trimakas and Nicolay (1974) utilized the Tennessee Self Concept Scale (Fitts, 1965) in their investigation of self concept and altruism in the elderly. The Tennessee Self Concept Scale (TSCS) consists of 100 self descriptive statements each of which is rated on a five point scale ranging from 1--completely false, to 5--completely true. Guidelines for development of the items used in the TSCS were not adequately specified by Trimakas and Nicolay.

In their investigation, Trimakas and Nicolay defined self concept as the total positive score, or the sum of the 90 items comprising the Positive Self Esteem Scale of the TSCS. With respect to the methodology used in the measurement of self concept in the elderly, the Trimakas and Nicolay investigation is subject to some of the same criticisms offered earlier in this review. First, in terms of item selection, there is no indication that the items chosen were either relevant to elderly persons, or that the items contained no negative biases toward the elderly. Secondly, Trimakas and Nicolay compared the scores of their subjects to the scores of the normative sample developed by Fitts, rather than a normative sample of elderly persons. Consequently, the possible interpretations of Trimakas and Nicolay's subject's scores are quite limited without the appropriate normative data. A final criticism relates to the format of the TSCS. The TSCS booklet is structured in such a manner that it requires detailed reading and careful execution of directions in order to correctly complete the items. This format may be somewhat confusing and threatening to the aged, especially to those with lack of experience with standardized test forms, and to those with cognitive impairments.

In another study using a Q-sort methodology, Pierce and Chiriboga (1979) used Block's Q-sort (Block, 1961) to investigate changes in adult self concept as a function of time. In

this investigation, Block's 70 item Q-sort was administered to subjects three times over a five year period. Block's Q-sort consists of 70 descriptive adjectives and phrases which were rated on a four point scale ranging from 1--characteristic of themselves, to 4--uncharacteristic of themselves.

Again, the limitation inherent in this Q-sort is that the reliability and validity of the items for use with the elderly was not established. Beyond this limitation, it must also be noted that Pierce and Chiriboga give an inadequate description of their sample so the actual age groupings are unknown. In addition, they provide no reliability data by age groupings. Consequently, although the Block Q-sort may be an appropriate instrument for use with the elderly, no firm conclusions can be drawn without the provision of more adequate data, especially normative data by age groupings.

There are a number of additional studies directed at investigating self concept among the elderly, which contain only minimal information regarding the self concept scales and measurement methodologies used. In a cross-sectional study designed to look at the effects of social change upon the self, Sharan (1974) identified three aspects of self: the ideal, the perceived, and the affective. In order to measure self concept, this investigation used a self concept inventory developed by the author for use in that study. Although Sharan did provide several test-retest reliability

coefficients (of unknown intervals) there was no description of the self concept inventory itself, nor was there any additional normative data included. Wolk and Tellen (1976) used a self acceptance scale consisting of 36 items rated on a five point scale. They included no description of the items on the self acceptance scale and no normative or psychometric data regarding use of the scale with elderly persons. Reid, Hass, and Hawkings (1977) utilized ten five point semantic differential items adapted for use in their investigation of locus of desired control and self concept in the elderly. They provided no information regarding the items selected for use in the semantic differential scale.

In a more recent study, Nehrke, Hulicka, and Morganti (1980), sought to investigate age differences in self concept by using a 29 item semantic differential self concept scale based upon the work of Monge (1975) and Nehrke (1974). They provided no description of the self concept scale, thus the reader is again left to question the procedures for item selection and the format of the scale.

In addition to the studies reviewed above, a number of recent dissertations are representative of attempts to measure self concept in the elderly. Drumgoole (1980), Young (1981), and Bonds (1980) all used the Tennessee Self Concept Scale as their measure of self concept in the elderly. Eden (1980) used two forms of a semantic differential specifically developed for use in that investigation.

In summarizing the review of previous attempts to measure self concepts of the elderly, several characteristics of these studies seem especially prominent. First, there appears to be a proliferation of different instruments being used to measure self concept (Wylie, 1974; Seltzer, 1979; Savage, Gaber, Britton, Bolton, & Cooper, 1977; Breystspaak & George, 1979). Secondly, there appears to be very little standardization data available for these instruments. As several sources (Oberleder, 1967; Seltzer, 1975; Hess & Bradshaw, 1970; Wylie, 1974; Breytspaak & George, 1979) note, most of the instruments used to measure self concept in the elderly have little or no accompanying reliability and validity data, and there are few studies which replicate use of particular instruments. In addition, most studies have not used appropriate age norms for the elderly (Oberleder, 1967; Lawton et al., 1980; Breytspaak & George, 1979; Schaie & Schaie, 1977).

With respect to validity and data, many of the measures of self concept seem especially weak. The majority of studies report only the face validity of the instrument, or validational data obtained from a sample of younger subjects, usually young adults (Breytspaak & George, 1979). As the literature on the need for differing kinds of validational data is extensive (for reviews see Wylie, 1961; Wylie, 1974; Wylie, 1979; Fiske, 1971; Cronbach, 1971), no attempt will be made here to discuss the importance of the various types of validational

data. In terms of the samples from which validity data has typically been obtained, it should be noted that it can not be assumed that instruments have equal validity across age groups (Schaie & Schaie, 1977). Thus, validity data obtained from young adults may not be applicable to samples of elderly persons.

That it is necessary to obtain validational data for specific age groups gives rise to some special issues concerning validity of measures of self concept in the elderly. Earlier in this review, in reference to several studies, it was noted that the content of items in the self concept instruments appeared to contain negative stereotypes of the aged, thus introducing biases into the measurement of self concepts of the elderly. While any factor which introduces bias in measurement is a serious problem, there is a potentially more significant issue regarding item content. This issue concerns the lack of ecological validity in the majority of instruments reviewed. As Schaie and Schaie (1977) and Breytspaak and George (1979) suggest, in order to insure proper assessment, it is necessary to evaluate measures of self concept for their relevance to the elderly. Because this issue of ecological validity is important both in determining the generalizability of findings and in terms of special implications in research with the elderly, it will be discussed in a separate section later in this review.

A third characteristic of previous attempts to measure self concept in the aged concerns the use of administration procedures and test formats which seem to introduce biases against the elderly test-takers. Because these issues are also of critical importance in assessment of the elderly, they merit detailed discussion and therefore, will also be included in a separate section later in this review.

A final characteristic of previous attempts to measure self concept is that most investigations have conceptualized and described self concept in terms of personality characteristics or traits. That is, self concept has been viewed phenomenally, or as the individual's view of his or her self worth either globally or along specific dimensions. Typically, this approach requires the person to rate him or herself on certain positive and negative personality characteristics or characteristics of self. For the elderly person, the request to rate oneself on positive or negative personality characteristics often produces defensive and/or distorted responses (Lawton et al., 1980). Thus, the traditional methods of assessing self concept in the elderly may contain yet another source of bias which may in turn produce errors or distortions in test scores.

Assessment Issues

The purpose of this review is to consider factors which may function to limit or impair the accurate measurement of self concept in the elderly. The factors to be considered

derive primarily from methodological procedures typically used and from the interaction of psychometric characteristics of instruments with characteristics of elderly persons.

In terms of methodological and psychometric issues, a number of sources (Schaie & Schaie, 1977; Neugarten, 1977; Schaie, 1978; Scheidt & Schaie, 1978; Lawton et al., 1980) have detailed the need for research methods which allow differentiation of age from cohort effects. The need for this differentiation is based upon the assumption that different age cohorts have been influenced by different social and cultural experiences. Individuals from differing cohorts may not only have differing views toward personality tests, but may also perform differently on measures of personality. The self concept questionnaire that asks about sexual behavior may elicit quite different responses from young persons as opposed to elderly persons. However, it would be erroneous to conclude, based on that data that age effects produced the differences. While the younger subjects may have been responding with more accurate self reports, the elderly subjects may have been responding with distorted self reports due to their socialization experiences which prohibit open discussion of sexuality (Lawton et al., 1980). Thus, what might have appeared to be a substantial difference in the nature of self concept as a function of age in reality was quite possibly an effect of comparing different cohort groups. Since the bulk of research in self concept studies in the

aged is based on cross-sectional designs, it is highly probable that age and cohort effects have been confounded, with age effects being over estimated.

Neugarten (1977) and Wylie (1974) list a number of additional methodological issues which prevent accurate assessment of self concept in the aged. Neugarten and Wylie state that most studies have: 1) no uniform agreement on the operational definition of constructs, 2) have used samples that were quite varied, limiting the comparisons to be made, or 3) have used samples which were quite homogenous on a number of demographic and socioeconomic variables, producing an overestimation of age differences, 4) have lacked adequate controls, 5) have used instruments of unknown reliability and validity for elderly persons, or 6) have used tests which were not relevant to elderly persons. In regard to the issue of relevance, Schaie and Schaie note that most instruments have been developed or directed toward young adults and children and have tended to emphasize pathology.

Beyond the methodological and psychometric issues listed above, there are some characteristics which are statistically more frequent among the elderly (Lawton et al., 1980) which might tend to limit the accuracy and meaningfulness of test results. Lawton suggests that impairments in cognitive functioning, related primarily to organic brain syndrome may effect the elderly person's ability to perform optimally on a test-taking task. Thus, self concept instruments which

are more complex, or which require following extensive directions, as many do, may penalize the elderly person.

While the prevalence of cognitive impairments due to organic brain syndrome is somewhat lower among community-residing aged as compared to clients in service settings (Gunner-Swensen & Jensen, 1976), the occurrence of sensory-motor impairments appears to be more prevalent (Lawton et al., 1980), and is perhaps a more significant influence upon test performance. Visual impairments appear to be common due to several factors including: decreased transparency of the lens, reduction of pupil size, changes in vitreous humor and retinal changes (Schaie & Schaie, 1977; Commalli, 1970; Corso, 1971). Auditory impairments may also make it difficult for the older person to understand the directions for test taking. In addition, difficulties in motor coordination and motor control may produce longer response times, or might falsely appear as indicators of organic brain syndrome (Lawton et al., 1980; Schaie & Schaie, 1977).

Another set of characteristics of the elderly which might influence test results includes educational background, motivational factors and response sets. According to Lawton et al., (1980) elderly people today on the average have less than a tenth grade education. This fact coupled with the knowledge that the classroom environment has become significantly more sophisticated over the years makes it safe to assume that the elderly person may view testing situations

quite differently than younger persons based on their lack of experience with standardized testing. Furthermore, the psychologically naive older person may view psychological tests as more threatening, and may thus be more likely to be influenced by anxiety (Oberleder, 1967).

The majority of investigations reviewed have confounded age and cohort effects, along with using such practices as 1) administering self concept instruments in large groups, 2) giving little consideration to providing individualized instructions in order to insure that the elderly subject understand the task, and 3) showing a lack of concern with the older person's probable lack of experience and anxiety toward testing. It is the assertion of this investigation that the combination of the factors listed above produce inaccurate estimates of self concept in the elderly person, and may in some cases prevent any measurement of self concept. Further, it is likely that the combination of factors listed above also serves to maintain what Lawton (1970) and Lawton and Gotesman (1974) see as a disregard for problems of the elderly and lack of development of a well-defined technology for assessment of the aged (Neugarten, 1977).

Ecological Validity

The term "ecological validity" appears to represent a "second order construct" (Scheidt, 1981), and as it is used in research refers to issues of external validity and generalizability of results, and to issues of relevance

or meaningfulness of the research variables or instruments being used. Scheidt refers to the latter of these two as "functional validity." The development of interest in ecological validity appears to be an outgrowth of recent increased interest in person-environment interactions (Scheidt & Schaie, 1978) and the accompanying emphasis on attempts to conduct more meaningful research through focusing on the environment and the ecological context of the person.

Some of the research in aging has recognized the need to address issues of ecological validity. Deming and Pressey (1957) were among the first to recognize the need for developing measures more appropriate to the life situations of the elderly. Schaie (1978) described the need for development of tasks which are both relevant and meaningful to the group being studied. Schaie further indicates that there should be more emphasis on "criterion situations" within which a given construct is expressed, with the criterion situations being identified separately for different portions of the life span. However, in reviewing studies of self concept in the aged, it becomes apparent that there has been a lack of concern for conducting ecologically valid research.

Throughout the review of previous attempts to measure self concept in the elderly, numerous references have been made to validity issues. In most of the investigations reviewed two common issues were identified: 1) issues relating to the content of items in self concept instruments, and 2) issues

relating to development of the self concept instruments. In terms of item content it was noted that most of the self concept instruments included items which seemed to contain negative biases against the elderly (see Mason, 1954; Bloom, 1961) discussed earlier in this review). With respect to instrument development, it was noted that for most investigations one of two conditions usually prevailed: either scales were developed and normed for young populations (usually college aged individuals), or that items were developed or selected on the basis of opinions of "experts," (usually younger to middle aged psychologists) (see Mason, 1954; Bloom, 1961; Lewis, 1971; earlier in this review). Thus, the two overriding validational concerns with most previous research are with the inclusion of negative biases against the elderly, and the use of item development and selection procedures which raise questions regarding the appropriateness of the items for elderly persons.

That there have been no systematic attempts to insure the ecological validity of research on self concept in the aged has several implications. The most benign implication is that the measure of self concept has no real importance or practical value. As Scheidt and Schaie (1978) note in discussing measures of intelligence, many tests may be of no practical importance because they are based on tasks which are seldom or rarely faced by the elderly. The same may be said of many self concept instruments which focus on events

which are not a part of the elderly person's life situation (i.e., work). The most serious implication is that test results will be spurious and may represent inaccurate or distorted pictures of the elderly person. Schaie (1978), and Schaie and Labouvie Vief (1974) note that in studies where substantial cohort differences were found on visuo-spatial ability, further observation subsequently revealed that part of the observed difference was due to characteristics of the measures and their lack of significant import for the individual examined. Again, the assertion is that self concept instruments containing items of little relevance to the elderly may produce distorted results.

Because the ecological measure of self concept proposed in the present investigation was designed to be more sensitive to the interaction of environment and self concept, and was based upon ecological items rather than transcontextual personality descriptors used in nonecological or traditional measures, one expectation was that although both types of measures would share some common domain, these measures would also differ in some significant ways. That is, to a certain extent both types of instruments would measure global self esteem and would be correlated with criterion variables such as depression and anxiety. However, because this investigation proposed that these types of measures significantly differ from each other, an additional expectation was that ecological measures would correlate more highly with other

ecological measures than with nonecological measures of self concept. Several types of scores and measures were used, including the standard Self-Ideal Self discrepancy coefficient. It should be noted that while Self-Ideal Self discrepancy coefficients are commonly used in Q-sorting procedures, and are reported to be valid measures of self esteem or self regard (Wylie, 1974) and psychological well being (Rogers & Dymond, 1954); some research does suggest that discrepancy coefficients may be neither precise nor valid measures of self esteem (Bauer & Achenbach, 1975; Katz et al., 1975). Bauer and Achenbach found that Self-Ideal discrepancies were related to type of psychological defense used. Katz et al., suggest that cognitive developmental level is a factor in Self-Ideal discrepancies. These may not be a unitary construct.

For the purposes of the present investigation, it was necessary to follow standard procedures in order to have some basis for comparing ecological Q-sort with other Q-sorts. Thus, Self-Ideal discrepancy coefficients were utilized, but were not offered as measures of self esteem or psychological well being.

Hypothesis proposed by the present investigation were as follows.

1. Correlations among self-ideal self discrepancy coefficients of ecological measures will be greater than correlations between ecological and nonecological self-discrepancy coefficients.

2. Correlations among self scores of ecological measures will be greater than correlations between ecological and non ecological self scores.
3. Correlations among ideal self scores of ecological measures will be greater than correlations between ecological and nonecological ideal self scores.

The remaining hypotheses, 4 through 12, examined comparisons among measures of self concept and measures of depression, anxiety, and life satisfaction. In addition, further comparisons were made across several subject groupings: high versus low depression scores, high versus low anxiety scores, and high versus low life satisfaction scores.

The specific hypotheses were as follows.

4. Correlations among ecological measures of self concept will be greater than correlations between ecological measures and measures of depression, anxiety, and life satisfaction.
5. Self-ideal self discrepancy coefficients for both ecological and nonecological measures of self concept will be greater in the low depressed group than in the high depressed group.
6. Self-ideal self discrepancy coefficients for both ecological and nonecological measures of self concept will be greater in the low anxiety group than in the high anxiety group.

7. Subjects in the high depression group will have significantly lower ecological self concept scores than subjects in the low depression group.
8. Subjects in the high anxiety group will have significantly lower ecological self concept scores than subjects in the low anxiety group.
9. Subjects in the high life satisfaction group will have significantly higher ecological self concept scores than subjects in the low life satisfaction group.
10. Subjects in the high depression group will have significantly lower nonecological self concept scores than subjects in the low depression group.
11. Subjects in the high anxiety group will have significantly lower nonecological self concept scores than subjects in the low anxiety group.
12. Subjects in the high life satisfaction group will have significantly higher nonecological self concept scores than subjects in the low life satisfaction.

Method

Development of the Ecological Q-sort

As has already been discussed, previous attempts to measure self concept in the elderly have suffered from several problems, most notably are the lack of ecological validity and lack of appropriateness of instrument design and format for

elderly persons. In order to address these issues, the present investigation proposed the development of an ecological Q-sort for measurement of self concept in the elderly.

The development of the Ecological Q-sort (EQ) may be described along two major dimensions: 1) the use of the Q-sort methodology, and 2) the choice of the domain of items which are to be samples. With respect to the first dimension, the Q-sort methodology was chosen for several reasons. Previous research which has indicated that the elderly represent a more heterogeneous population dictates that a more idiographic approach to personality measurement be used. The Q-sort methodology is representative of a more idiographic approach and it does allow for measurement of greater within person variability. In addition, the task of sorting cards appears to be less threatening and less complex than other types of measurement approaches which involve following complex instructions and the labeling of oneself according to personality descriptors which are often negative and/or inappropriate to elderly. Thus, the Q-sort methodology has several advantages. For the subject, the task is easier to complete. For the experimenter, this methodology increases the probability and ease with which subjects may give accurate and meaningful self reports. A further advantage of particular significance for this study is that the Q-sort methodology will allow the person greater freedom in describing himself in terms of his ecological context.

In regard to the second dimension, the domain of items to be samples, the assumptions and approach of the present investigation dictated that items which purport to measure self concept in the elderly must be ecologically valid for elderly persons. Thus, one of the major focuses in development on the ecological Q-sort was the development and selection of items which have ecological validity for elderly. The initial step in the process was to review earlier research (Hayslip & Mullins, 1981) in which a sample of male and female retirees (ages 60 and older) were asked to identify and describe events in their every day lives. Specifically, subjects in the Hayslip and Mullins study were 1) interviewed, 2) asked to identify and rate items from a list of life situations in terms of their relevance and importance to feelings about self, and 3) keep a diary of their activities for one week. Based on tabulations of frequency of occurence and ratings of relevance, 70 situations were selected for use in the present investigation. (See Appendix A for a complete list of situations.)

After the 70 situations were selected, the next step in item development involved having the situations portrayed in both pictorial and written formats. The descriptions of the 70 situations which formed the stimulus or basis for the pictorial representations were formulated according to the following criteria: in order to maintain ecological validity and maximize the appropriateness of the format of the cards

for elderly subjects, the situational descriptions: 1) attempted to portray the situation (i.e., "catching a bus") as clearly as possible while minimizing the importance of the character portrayed in the picture, 2) attempted to portray the characters in as neutral a manner as possible, except in situations were affect or behavior was clearly indicated (i.e., "you are laughing"), 3) attempted to portray characters in a nonstereotypic manner (i.e., not portraying characters using walking canes), 4) attempted to minimize unnecessary detail, using only the details necessary to clearly portray what the situation was, and 5) attempted to balance both the sex of the character in the situation and the sex role stereotyping present. A professional artist was then contacted to develop the pictoral Q-sort cards. In addition to the criteria listed above, the artist was also instructed to create realistic black and white drawings, 11" by 14" size. It should be noted that the Ecological Q-sort cards are considerably larger than traditional Q-sort cards in order to facilitate the subject's identification with the situation, and to minimize the effects of visual decrements as a factor in the subject's responding. The alternate form of the Ecological Q-sort, the written description version, was completed by printing a one sentence caption of life situation on 5" x 7" cards.

Upon completion, both forms of the Ecological Q-sort were pilot-tested on a group of elderly men and women in order to obtain their written and verbal reactions to the instrument.

The primary purpose of the pilot-testing was to identify any procedural or administration problems. Because subjects appeared to have difficulty with physically sorting the large cards into seven categories, the number of categories was reduced from seven to five. Additionally, pilot testing suggested that a seven point discrimination created considerable difficulty for subjects in making accurate judgements.

The final Ecological Q-sort consisted of two alternate decks (a pictorial plus written description and a written description only) of 70 black and white, 11" x 14" cards and 5" x 7" cards respectively. In terms of sex balance of the characters portrayed on the cards, the following ratio was in effect: cards with a female character = 20, cards with a male character = 20, and cards with both male and female characters =30.

The Ecological Q-sort was designed to be a self administered instrument and cards were sorted into a specially constructed sorting box with labeled compartments for easy identification. The sorting box was used in order to structure and enhance understanding and completion of the task. Fourteen cards were to be sorted into the following five categories:

1) most characteristic of me
2) fairly characteristic of me
3) neither characteristic of me nor uncharacteristic of me

4) fairly uncharacteristic of me

5) most uncharacteristic of me

With regard to the number of cards which may be sorted into the five categories, that is whether subjects may sort freely or according to a forced choice, the ecological Q-sort specified a type and shape of distribution in accord with the recommendations of Block (1961) and Stephenson (1953). As Block notes, the goal of Q-sorting is "comparable descriptions" and when a forced distribution is not used several problems may arise. One, the sorting may be characterized by undesirable response sets leading to a disproportionate weighting. For example, subject A sorts many more items into "most characteristic" category than subject B who sorts many items into the "fairly characteristic" category. By virtue of category weighting, subject A will have a disproportionate effect on a consensus judgement. Another problem might arise from differences in the way sorters segment the continuum. Although two sorters might have a high agreement in their rank ordering of items which are salient or defining of themselves, these same two sorters might differ significantly when asked to dichotomize items which are characteristic versus uncharacteristic. Thus, although both sorters agree on the items which are salient, this agreement may be disguised or unfairly attenuated due to their categorizing

proclivities. As Block notes

> Where evaluations are expressed in more intervals than a dichotomy, but in less detail than a complete rank-ordering, an essential agreement among judges may be obscured if judges distribute their Q items in highly individual ways (p. 75).

Further, since the number of items (70) exceeds the number of categories (5), the correspondence of different item arrangements (different Q-sorts) becomes influenced by the shapes of the item distributions as well as by their orderings. Differences in shape will attenuate the index of agreement between the two distributions.

Because a complete rank-ordering of all 70 items seems logically and physically impossible, the alternative was to use a set number of categories within which further item discriminations are not made. Again, to prevent distortions due to idiosyncratic placement of items into categories, the further requirement is made to place specific numbers of items in each category. Thus, we have the universal distribution of Q items which allows for straight forward and meaningful comparison.

In summary then, the forced choice Q-sort seemed desireable for several reasons. As Cronbach (1953, p. 378-381) notes, the forced distribution requires that every person put himself on the measuring scale in much the same manner. Further, the forced choice distribution eliminates response

set bias and other factors which may obscure correspondence between Q-sorts, thus allowing a clear assessment of the degree of equivalence between sorts (Block, 1961).

With respect to the shape of the Q-sort distribution, Block provides several guidelines. First the distribution should be symmetrical, with a "fixed, but sensible number of categories." Further, Block, and Livson and Nichols (1956) suggest that the rectangular distribution allows for the maximal number of discriminations and is thus more desirable.

Validational Procedures in the Development of the Ecological Q-sort

The present investigation was concerned not only with developing an instrument with ecological validity, but also was concerned with establishing this instrument's content, construct, and discriminant validity as well. Within the present investigation, the establishment of ecological validity was viewed as a process consisting of multiple operations. Outlined earlier in this paper, these operations included selecting: 1) cohort relevant items, 2) items which are representative of life situation which older persons encounter, and 3) items which are meaningful to the elderly person. The present investigation appears to have met these criteria through sampling elderly to identify a pool of items which are situationally relevant and through attempts to maintain the situational integrity of the items in the construction

of the instrument. Issues of content validity also appear to have been adequately addressed through item development and selection procedures.

With respect to construct validity, Wylie (1974) and Campbell and Fiske (1959) suggest that the construct validity of an instrument may best be established through a process involving both convergent and discriminant validational procedures. Convergent validity would be established with the presence of significant intercorrelations among measures presumed to measure the same construct. Discriminant validity would be established through the absence of correlations between instruments which are intended to measure different constructs. In the present investigation, one expectation was that while ecological measures would be sufficiently correlated with nonecological measures (e.g., in terms of global self regard), the ecological measures would be more highly intercorrelated with each other than with nonecological measures. Thus, in order to establish construct validity, the present investigation examined intercorrelations among all measures, as well as examining the theoretically predicted relationships among variables.

Subjects

The subject population in the present investigation was composed of 80 females and males who were 55 years of age and older. These subjects were independent, community living

individuals who volunteered to participate in the study. Subjects were contacted through senior citizens centers, social organizations, older adult continuing education classes, and friendship networks.

Subjects in this investigation were predominantly female (N = 64). However, sample composition appears to be fairly representative of the population of older adults participating in social organizations, classes, and programs for senior citizens. Fifty-one percent of the subjects were from 71 to 87 years of age. Forty-eight percent of the subjects lived alone, while 42.5% lived with their spouse. The majority of the subjects (51%) perceived themselves to be in "good" health, while 23.7% perceived themselves to be in "fair" health, and 18.8% perceived themselves to be in "excellent" health. Twenty-two point five percent of the subjects completed the 8th grade or less, 26.2% completed high school, 18% had attended college, 17.5% had completed undergraduate degrees, and 5% had completed master's degrees. With respect to yearly income, 20% of the subjects reported 8,000 dollars or less, 8.6% reported 10,000 to 12,000 dollars, 17.5% reported 12,000 to 15,000, 8.7% reported 15,000 to 20,000, and 11.2% reported more than 20,000 dollars. The majority of the subjects lived in small towns or rural settings in Pennsylvania, and were in proximity to either family or well established friendship networks.

Instruments

Ecological Measures. 1) Ecological Pictorial Q-sort (EPQ) consisted of 70 11" x 14" cards with pictorial representations and written descriptions of older people in every day situations. The Q-sort was a self administered, self report instrument designed to measure the elder person's self concept in ecological phenomenological terms. The cards were sorted into five categories ranging from "most characteristic of me" to "most uncharacteristic" of me. Fourteen cards were sorted into each category. 2) Ecological Word Q-sort (EQW) consisted of 70 5" x 7" cards with one sentence descriptions of older people in everyday situations. The same 70 situations are used in both Pictorial and Word Q-sorts.

Results of the Q-sorts yield four scores, the Self-Ideal Self discrepancy coefficient (SIr), the Self Concept score, the Ideal Self Concept score, and the Self-Ideal Self difference score. The SIr was computed according to the standard procedure developed by Block. Individual item placements for each Q-sort were recorded by category and the category number was recorded as the item's Q'value. For example, if item 23 was placed in category 5, it was given a Q-value of 5. The two sorts were than compared item by item. The squared difference in the corresponding Q-values was then recorded. The correlation between the two sorts was then computed by Block's formula:

$$SIr = 1 - \frac{\Sigma dip^2}{560}$$

where dip^2 is the squared discrepancies between items.

The Self Concept scores were computed by summing weighted values for 35 selected items from among the 70 Q-sort items. The items were selected by a team of ten judges who were asked simply to go through the Q-sort and identify the "positive" cards. The judges were all psychologists ranging in age from 30 to 58. A criterion of 80% agreement was used to select the items.

Self concept scores were computed by simply "scoring" or weighting the positive items according to their category placement in the subject's Q-sort. Because category 1 ("most characteristic of me") is the most salient, it was given a value of 5. Category 2 was given a value of 4, category 3 = 3, Category 4 = 2, and Category 5 was given a value of 1. The value for the 35 items were then summed to yield the Self concept score for each subject.

The Self-Ideal Self difference score was computed by subtracting the Self Concept score from the Ideal Self concept score. This difference score was included primarily to allow for comparison with the Self-Ideal Self discrepancy coefficients.

Nonecological Measures. 1) Block California Q-sort for Use with Nonprofessional Sorters (BCQ) (Block & Thomas, 1955) is an adjective Q-set consisting of 70 items which are sorted into seven categories with 10 items in each category. The BCQ is self administering and is appropriate for use with individuals of high school educational level. The BCQ results

are utilized in the same manner as the results from the ecological Q-sort. In addition, the same procedure that was used for ecological measures was used for selecting positive items for the Block Q-sort. Thus a Block Self concept score is computed in the same manner as the Ecological Self concept scores. Although reliability and validity data are reported, no age appropriate norms are reported.

2) Tennessee Self Concept Scale (TSCS) (Fitts, 1964) is a 90 item self report instrument designed to measure self concept. Subjects rate each item statement of a five point scale ranging from "completely true of me" to "completely false of me." The TSCS yields several scores including: 1) a total positive score which indicates overall level of self regard, 2) self criticism score, 3) self satisfaction score, and 4) scores on physical self, moral-ethical self, personal worth, family and social self. Although the TSCS has been used with older persons, no age-appropriate norms for reliability and validity have been reported.

3) Zung Self-Rating Depression Scale (ZDS) (Zung, 1965) is a 20 item self administered scale designed to assess the presence of depressive syndrome, and is considered appropriate and useful with older populations (Gurland, 1980). The scale consists of statements found to be representative of depressive characteristics such as pervasive effect, physiological equivalents, and psychological concommitants. Items are balanced for positive and negative responses and are rated on a four point

scale of severity for each item ranging from "a little of the time" to "most of the time." The total score represents severity of depression. The Zung Depression scale is frequently used with older persons and is considered to be valid and reliable for older persons. However, no specific age norms are reported.

4) Life Satisfaction Index-Z (LSZ) (Woody, Wylie, Sheafor, 1969) is a 13 item scale designed to measure the psychological well-being of elderly persons. The LSZ was derived from the Life Satisfaction Index-A (Neugarten, Havighurst, & Tobin, 1965) which was developed on elderly persons through extensive interviews about the individual's daily activities, attitudes, values and social interactions. The LSZ was derived by conducting an item analysis, subsequently dropping seven items from the original 20, and by devising an alternate scoring method. The LSZ consists of 13 statements to which the subject may agree, disagree or mark "not sure." Responses are scores as "2" for a "correct" answer, "1" for a question mark or no response, and "0" for an "incorrect" response. Higher scores indicate greater life satisfaction or psychological well-being. Although reliability and validity data are not reported, the LSZ was developed for older persons.

5) Rosenberg Self Esteem Scale (RSE) (Rosenberg, 1965) is a 10 item scale designed to measure global self regard or self esteem. Responses are scored from "1" strongly agree to "4" strongly disagree. Higher scores indicate higher self

esteem. The RSE was developed and normed on a young adult population. No norms for older persons are reported.

6) State-Trait Anxiety Scale (STA) (Spielberger, 1969) consists of 30 statements to which the subject responds. Responses are scored from "not at all," "somewhat," "moderately so," and "very much so." Subjects are instructed to respond either according to the way they are "now" (state anxiety) or according to the way they usually are (trait anxiety). Higher scores indicate higher levels of anxiety. The STA is used with older persons although no specific age norms are reported.

Procedure

Upon contact with the experimenter, subjects were given a written and verbal description of the experimental procedures and were informed that participation was voluntary and confidential. The battery of nine instruments were administered on an individual basis for all subjects. Instructions for completing instruments were standardized in verbal and written format (Appendix B), and the experimenter answered questions until the subject clearly understood how to complete the instruments. There were no time limits placed upon completion of the instruments.

Instruments were administered in the following fixed order: 1) brief demographic questionnaire, 2) Ecological Q-sort pictoral, 3) Block Q-sort, 4) Rosenberg Self Esteem

Scale, 5) Life Satisfaction Scale-Z, 6) Zung Self-Rating depression Scale, 7) State Trait Anxiety Scale, 8) Tennessee Self Concept Scale, and 9) Ecological Q-sort, written description version.

Results

Data were analyzed by several methods. First, Pearson product moment correlations were computed between all variables. Secondly, tests of significance of difference between correlations were computed. Third, multivariate analyses of variance and covariance was performed.

Results of Pearson product moment correlations are reported in Tables 1 and 2. The intercorrelations among all measures of self concept are shown in Table 1. As Table 1 shows, a number of significant correlations were obtained, especially among ecological measures. Correlations among ecological measures ranged from .68 to .00 with correlations averaging .31. Correlations among nonecological measures ranged from .69 to .00, with correlations averaging .22. Correlations between ecological and nonecological measures ranged from .45 to .00, with correlations averaging .24.

Hotelling *t* tests (Guilford, 1965) for nonindependent *r*'s were performed in order to determine whether the correlations among ecological measures were significantly greater than the correlations between ecological and nonecological measures.

Table 3

Intercorrelation Matrix of Ecological and Phenomenological Measures of Self Concept

	PSIDC	PSC	PIC	PSID	WSIDC	WSC	WIC	WSID	BSIDC	BSC	BISC	BSID	BSI	TENN
Pictorial Self-Ideal Self Discrepancy Coefficient (PSIDC)														
Pictorial Self Concept Score (PSC)	.31**													
Pictorial Ideal Self Concept Score (PIC)	.18*	.45***												
Pictorial Self-Ideal Self Difference Score (PSID)	.40**	-.34***	.45***											
Word Self-Ideal Self Discrepancy Coefficient (WSIDC)	.16	.23*	-.01	-.25*										
Word Self Concept Score (WSC)	.23*	.68***	.32**	-.25*	.31**									
Word Ideal-Self Concept Score (WIC)	-.01	.00	.05	.02	-.12	.10								
Word Self-Ideal Self Difference Score (WSID)	-.33**	-.19*	.17	.43***	-.45**	-.31**	.05							
Block Self-Ideal Self Discrepancy Coefficient (BSIDC)	-.19*	.33**	.35***	.06	.15	.34**	-.05	-.08						
Block Self Concept Scale (BSC)	.10	.26**	.33***	.15	.11	.29**	-.03	-.04	.69***					
Block Ideal Self Concept Score (BISC)	.03	-.14	-.07	-.18	.32**	.15	.00	-.14	-.06	-.23*				
Block Self-Ideal Self Difference Score (BSID)	-.09	-.35***	-.31**	.01	-.01	-.28*	.02	-.19*	-.65***	-.44***	-.12			
Rosenberg Self Esteem Score (RSE)	.05	.09	.02	-.18*	.25*	.02	-.05	-.27*	.31**	.27**	-.09	-.17		
Tennessee Total Positive Score (TENN)	.40***	.31**	.31**	-.02	.23*	.28*	.00	-.15	.49***	.34***	.17	-.59***	.20*	

*p < .05.

**p < .01.

***p < .001.

Table 2

Pearson Product Moment Correlations for Self Concept Measures and Criterion Variables

Self Concept Measures	Depression	State Anxiety	Trait Anxiety	Life Satisfaction
Pictorial Self Ideal Self Discrepancy Coefficient	-.19*	-.18*	-.28*	.13
Pictorial Self Concept Scores	-.39***	-.22*	-.25**	-.13
Pictorial Ideal Self Concept Scores	-.08	-.11	.00	-.08
Pictorial Ideal Self Difference Scores	.25*	.09	.23*	-.24*
Word Self-Ideal Self Discrepancy Coefficient	-.21*	-.13	-.17	.22*
Word Self Concept	-.28*	-.30**	-.30**	.25*
Word Ideal Self Concept	-.03	-.03	-.14	-.03*
Work Self-Ideal Self Discrepancy Score	.18	.33**	.29*	-.33**
Block Self-Ideal Self Discrepancy Score	-.29**	-.44***	-.49***	.23*
Block Self Concept	-.26**	-.45***	-.34***	.03
Block Ideal Self Concept	.17	.06	.00	.05
Block Self-Ideal Self Difference Score	.16	.35***	.35***	-.19
Rosenberg Self Esteem Score	-.07	-.38***	-.46***	.16
Tennessee Total Positive Score	-.41***	-.42***	.26*	.33**

*$p < .05$.

**$p < .01$.

***$p < .001$.

Results of the t-tests show that several of the correlations among ecological measures were significantly greater than their correlation with nonecological measures. Specifically, the correlations between Pictorial Self concept and Word Self concept scores were significantly greater than their correlation with 1) Block Self concept scores ($t = 4.36$, $p < .01$ and $t = 3.81$, $p < .01$ for Pictoral Self concept and Word Self concept scores respectively); 2) Rosenberg Self Esteem scores ($t = 5.05$, $p < .01$ and $t = 3.67$, $p < .pl$. for Pictorial Self and Word Self Concept, respectively); 3) Tennessee total positive scores ($t = 4.06$, $p < .01$, $t = 2.00$, $p < .05$, for Pictorial and Word Self concept, respectively). Correlations between Pictorial Self and Pictorial Self-Ideal Self discrepancy coefficients were significantly greater than the correlations between the Pictorial Self and the Rosenberg Self Esteem score ($t = 5.60$, $p < .01$). Similar comparisons yielded a $t = 6.09$, $p < .01$ for the correlation between Pictorial Self and Pictorial Discrepancy Coefficient versus that correlation between Rosenberg and Pictoral Discrepancy Coefficient.

Correlations between all measures of self concept and measures of depression, anxiety and life satisfaction are reported in Table 2. Means and standard deviations for all self concept measures and criterion variables are shown in Table 3. As Table 2 shows a number of significant correlations occurred. For ecological measures, correlations ranged from .39 to .00, with correlations averaging .28. For nonecological measures, correlations ranged from .49 to .00, and averaged .31.

Table 3

Overall Means for Ecological Measures, Nonecological Measures, Depression, Anxiety, and Life Satisfaction

Self Concept Measures	Mean	SD	Range
Pictorial Self-Ideal Discrepancy Coefficient	71.8	11.16	.24-.93
Pictorial Self Concept Score	105.5	6.4	88-120
Pictorial Ideal-Self Concept Score	113.7	8.9	88-127
Word Self-Ideal Self Discrepancy Coefficient	.738	.139	.09-.98
Word Self Concept Score	102.29	7.3	88-119
Word Ideal Self Concept Score	119.7	9.0	93-146
Block Self-Ideal Self Discrepancy Coefficient	.558	.162	.10-.88
Block Self Concept Score	157.5	16.65	107-230
Block Ideal-Self Concept Score	179.2	16.55	121-212
Rosenberg Self Esteem Score	30	4.2	17-39
Zung Depression Scores	35.6	4.5	14-52
State Anxiety	35.5	9.9	20-58
Trait Anxiety	40	8.4	24-64
Life Satisfaction	18.8	4.5	8-25
Tennessee Total Positive Scores	347.46	29.44	261-406

Hotelling t tests were performed in order to determine whether correlations among ecological measures were significantly greater than their correlation measures of depression,

anxiety, and life satisfaction. Results of the t-tests indicate that several correlations among ecological measures were significantly greater than their correlations with depression, anxiety, and life satisfaction. Correlations between Pictorial Self concept and Word Self concept were greater than their correlations with 1) Zung Depression scores ($t = 3.55$, $p < .01$, $t = 4.78$, $p < .01$ for Pictorial Self and Word Self, respectively); 2) Trait Anxiety ($t = 3.55$, $p < .01$, $t = 4.78$, $p < .01$ for Pictorial Self and Word Self, respectively); 3) State Anxiety ($t = 3.85$, $p < .01$, $t = 4.46$, $p < .01$ for Pictorial Self and Word Self, respectively); and 4) Life Satisfaction ($t = 5.96$, $p < .01$, $t = 7.25$, $p < .01$ for Pictorial and Word Self, respectively).

Tests of Significance Between Groups

In addition to examining correlation data, another primary focus of the present investigation was to evaluate the performance of ecological measures across different subject groupings. For all of the analyses to follow, the distributions of scores for criterion variables (depression, anxiety, and life satisfaction) were dichotomized by dividing scores at the median.

Fisher Z tests (independent r's, Guilford, 1965) were computed to determine the presence of any significant differences in Self-Ideal Self discrepancy coefficients between high and low life satisfaction groups. Results of these tests

were all nonsignificant, indicating no differences to exist in ecological or nonecological Self-Ideal Self discrepancy coefficients when blocked by depression, anxiety, and life satisfaction.

The next step in data analysis involved performing several multivariate analyses of variance (Bock, 1965) and covariance. These MANOVA's for all measures of self concept as a set blocked by age, sex, health, depression, anxiety, and life satisfaction revealed several significant findings. MANOVA's are reported as Hotelling t values (trace) converted to F ratios, (Hull, C. H., & Nie, N. H. SPSS, update 7-9, 1981). When all measures of self concept were simultaneously compared, there were significant effects for sex (F (20, 43) = 2.25, $p < .01$), health (F (60, 119) = 1.44, $p < .05$) and State Anxiety (controlling for age) (F (20, 42) = 2.20, $p < .02$). MANOVA's blocked by age, depression (controlling for health), Trait Anxiety (controlling for education), and Life Satisfaction were nonsignificant.

When only the ecological measures were analyzed together, several significant MANOVAs resulted. There were significant effects for depression (controlling for health), (F (10, 52) = 3.28, $p < .002$), Life Satisfaction (F (10, 53) = 2.03, $p < .05$), age (F (10, 52) = 4.55, $p < .0001$), and sex (F (10, 53) = 2.64, $p < .01$).

When only the nonecological measures were analyzed together, several significant MANOVAs resulted. There were

significant effects for State Anxiety (controlling for age) (F (8.65) = 4.50, p < .0001), Trait Anxiety (controlling for education) (F (8.65) = 2.13, p < .05) health (F (24, 198) = 1.94, p < .01), age (F (8.67) = 2.27, p < .05), and sex (F (8.66) = 2.21, p < .05).

When only the discrepancy coefficients and discrepancy scores were analysed together, there were also several significant effects, for State Anxiety (controlling for age) (F (7.55) = 4.07, p < .0001), for Trait Anxiety (controlling for education) (F (1. 55) = 3.05, p < .01), for Life Satisfaction (F (7, 56) = 2.47, p < .05).

The next step in data analyses involved performing one-way univariate analysis of variance and analysis of covariance. Inspection of ecological measures revealed several significant main effects. For Pictorial Self concept blocked by depression (controlling for health), there was a significant main effect (F (1, 62) = 9.83, p < .003). Inspection of cell means reveals that subjects in the higher depression groups had lower self concept scores. For Word Self concept scores, there was a significant main effect for depression (controlling for health) (F (1, 61) = 6.60, p < .01). Subjects in the higher depression group had lower self concept scores. For Word Self concept, there was a significant main effect for State Anxiety (controlling for age) (F (1, 62) = 4.176, p < .05). Subjects in the high anxiety group had lower self concept scores. For Word

Self concept, there was also a significant main effect for life satisfaction (F (1, 62) = 5.53, $p < .05$) with subjects in the high life satisfaction group having higher self concept scores.

One way analysis of variance for nonecological measures also revealed several significant main effects for depression (controlling for health), Trait Anxiety (education controlled), and Life Satisfaction. For the Tennessee Total Positive score, there was a main effect for depression (F (1, 74) = 7.84, $p < .01$), with subjects in the high depression group having lower Total Positive scores. For the Tennessee Total Positive Scores, there were also main effects for Trait Anxiety (F (1, 74) = 6.59, $p < .02$), and State Anxiety (F (1, 74) = 15.14, $p < .0001$). Subjects in high Trait and State Anxiety groups had lower Tennessee Total Positive scores. For the Tennessee Total Positive, there was a main effect for Life Satisfaction (F (1, 74) = 5.64, $p < .02$). Subjects in the high Life Satisfaction group had higher Tennessee Positive scores.

For Rosenberg Self-Esteem scores, there were significant main effects for Trait anxiety (F (1, 74) = 10.59, $p < .01$), and State Anxiety (F (1, 74) = 6.30, $p < .01$). Subjects in both high Trait and State Anxiety groups had lower Rosenberg Self Esteem Groups.

For Block Self concept scores there were significant main effects for Trait Anxiety (F (1, 63) = 8.26, p < .01) and State anxiety (F (1, 63) = 25.16, p < .005).

Discussion

Hypothesis 1 stated that correlations among Self-Ideal Self Discrepancy Coefficients of ecological measures will be greater than correlations between ecological and nonecological Self-Ideal Self Discrepancy Coefficients. This hypothesis was not supported by data analysis. Correlations among ecological discrepancy coefficients were not significantly greater than their correlations with nonecological discrepancy coefficients.

Hypothesis 2 stated that correlations among self scores ecological measures will be greater than correlations between ecological and nonecological self scores. This hypothesis was supported by data analysis. The correlation between Pictorial Self concept and Word Self concept (.68) was significantly greater than the correlation between Pictorial Self and nonecological measures, and was significantly greater than correlations between Word Self Concept and nonecological measures. (see Table 1). The relationship between Pictorial Self concept and Word Self concept, thus appeared to be stable and consistent across comparisons with nonecological measures.

Hypothesis 3 stated that the correlations among Ideal-Self scores of ecological measures would be greater than correlations between ecological and nonecological Ideal-Self

scores. This hypothesis was not supported by data analysis. There were no significant differences between correlation among ecological Ideal Self scores and nonecological Ideal-Self scores. (see tables 2 and 3).

Hypothesis 4 stated that correlations among ecological measures of self concept will be greater than correlations between ecological measures and measures of depression, anxiety, and life satisfaction. This hypothesis was partially supported by data analysis. Correlations among Pictorial Self concept and Word Self concept were significantly greater than their correlations with depression, Trait and State anxiety, and Life Satisfaction (see Table 3 and 4), but correlations among discrepancy coefficients and among Ideal-Self scores were not significantly different.

Hypothesis 5 stated that Self-Ideal Self discrepancy coefficients for both ecological and nonecological measures would be greater in the low depressed group than in the high depressed group. This hypothesis was not supported by data analysis. There were no significant differences in descrepancy scores between groups.

Hypothesis 6 stated that Self-Ideal Self discrepancy coefficients for both ecological and nonecological measures would be greater in the low anxiety group than in the high anxiety group. This hypothesis was not supported by data analysis. There were no significant differences in discreancy coefficients between high and low depressed groups.

Hypothesis 7 stated that subjects in the high depression group would have significantly lower ecological self concept scores than subjects in the low depression group. This hypothesis was partially supported by data analysis. There were significant differences between high and low depressed groups for Pictorial Self and Word Self concept scores. Further, this difference was in the predicted direction (see Appendix C), but there were no significant differences in Ideal-Self scores between high and low depressed groups.

Hypothesis 8 stated that subjects in the high anxiety group would have significantly lower ecological self concept scores than subjects in the low anxiety group. This hypothesis received partial support. There were significant differences between high and low anxiety groups for Pictorial and Word Self concept scores. Again this difference was in the predicted direction (see Appendix C). There were no significant differences in Ideal-Self concept scores between high and low anxiety groups.

Hypothesis 9 stated, subjects in the high life satisfaction group would have significantly higher ecological self concept scores than subjects in the low life satisfaction group. This hypothesis also received partial support by data analysis. Subjects in the high life satisfaction group did have higher Word Self concept scores (see Appendix C). There were no significant differences in Pictorial Self scores or Ideal-Self scores between high and low life satisfaction groups.

Hypotheses 10, 11, and 12 simply restate hypothesis 7, 8, and 9, to address differences between groups for nonecological self concept scores and were supported by data analysis. There were significant differences between high and low depression, anxiety, and life satisfaction groups for several of the nonecological measures (see Appendix C). These differences were in the predicted directions. That is, subjects in the high depression group did have lower Tennessee Total Positive scores than did subjects in the low depression group. Subjects in the high anxiety group did have lower Tennessee Total Positive scores, Rosenberg Self Esteem scores, and Block Self concept scores. Subjects in the high life satisfaction group had higher Tennessee Total Positive Scores.

In considering hypotheses 1, 2, and 3, those that predicted higher intercorrelations among ecological measures, results of data analysis indicate some support for the validity and reliability of the Ecological Q sort (EQ). The correlation between ecological Pictorial Self concept and Word Self concept scores (.68), which was quite robust and significantly greater than their correlations with nonecological self concept scores, provides a positive indication of the construct validity of the EQ. It appears that the ecological Self concept scores probably are measuring a self concept construct which is distinct from that measured by nonecological instruments. Further, the correlation between Pictorial Self and Word Self

concept also represents a measure of alternate form reliability and as such provides a positive indication of the reliability of the EQ.

With respect to the discrepancy coefficients and the Ideal Self scores, results of data analysis revealed that the predicted relationships were not obtained. There were no significant differences between correlations among ecological discrepancy coefficients and the correlations between ecological and nonecological discrepancy coefficients. These results thus do not offer support for the construct validity of the EQ, specifically the ecological discrepancy coefficient. While these latter results may even appear to question the construct validity of the EQ, several alternate explanations of these results should be considered.

As was suggested earlier, the present results may reflect that discrepancy coefficients are measuring somewhat different constructs than the self concept scores measure. The presence of a Self-Ideal self discrepancy does not necessarily indicate low self esteem or psychological maladjustment. The discrepancy may be related to the person's style of psychological defense (Bauer, 1976). Persons who tend to be sensitizers may have greater Self-Ideal Self discrepancies (Bauer, 1976).

There is some research to suggest that only the moderate to high discrepancies may be indicative of self regard or psychological adjustment (Wylie, 1974). Very low discrepancies

could be reported by very healthy happy individuals as well as by individuals whose judgments of themselves and of reality are seriously impaired.

The presence of discrepancies could also indicate that the person simply has very high ideal standards. With regard to the use of self-ideal self discrepancies, it appears that further research is necessary in order to investigate effects of type of psychological defense and also level of cognitive development. As Katz and Zigler (1975) suggest, persons of higher cognitive developmental level may make greater numbers of discriminations. In this light, Hoge and McCarthy (1983) have found, in research with adolescents utilizing nonecological measures, limited support for the use of self-ideal discrepancy scores in the measurement of self-regard.

The presence of nonsignificant results for ideal self concept scores may suggest that ideal self is also measuring different constructs than self concept scores. Ideal Self concept scores may not be based upon use of strictly situational/ecological criteria for sorting. That is, when asked to describe "Ideal Self", individuals may use other criteria such as "that which is socially desirable", or "that which is expected." These criteria are less situational and are more related to transcontextual and traitlike descriptions of personality. The hypothesis that Ideal Self may be more

defined in traitlike terms could be investigated in several ways. First, a measure of social desirability could be administered to subjects. Second, EQ items could be factor analyzed to determine if there are factors similar to more traitlike or idealized standards. Finally, the Q-sorts were administered in a fixed order: Self and then Ideal Self. Different results might have been obtained if that order of sorting had been varied. Future research might investigate the possibility of order effects.

With respect to the meaning of discrepancy coefficients and Ideal Self concept scores there are several factors to consider. One, subjects may have been responding in a significantly defensive manner. Behavioral observations during testing reveal that subjects asked about what the overall results of the research would say about them, they also asked whether they would be given some type of personality analysis, and they often asked if these were measures of intelligence. Subjects often made comments regarding the adequacy of their responding (i.e., "I just don't know if I can do this like you want."). When given the explanation about confidentiality several subjects stated that it didn't matter because they were not going to reveal anything "too personal." Overall, this suggests that subjects may have been defensive in their response to Q-sort items. As a way of partially addressing this issue, future research should include measures of social desirability.

Second, Ideal Self scores may have been an artifact of the Q-sorting procedure itself. During the sorting of cards for ideal self, several subjects mentioned that they were becoming fatigued from holding and placing the cards (the complete deck weighs approximately five pounds). Thus, fatigue may have been a factor in subjects' responses to the ideal self sort.

Hypothesis 4, which predicted that correlations among ecological measures and measures of depression, anxiety, and life satisfaction, also addressed construct validity. Results of data analysis revealed that correlation between Pictorial Self and Word Self concept scores was significantly greater than correlation between self concept scores and measures of depression, anxiety, and life satisfaction. Thus, these results did provide support for the construct validity of the EQ.

With respect to discrepancy coefficients and Ideal Self scores, results of data analysis reveal that correlations among discrepancy coefficients and among Ideal Self scores were not significantly different than the correlations between discrepancy coefficients and measures of depression, anxiety and life satisfaction and between Ideal self scores and these same measures. As was suggested earlier, rather than questioning construct validity, these results may reflect that discrepancy coefficients and Ideal Self scores are unduly

influenced by particular response sets and perhaps are not the most adequate measures of self concept (Hoge & McCarthy, 1983).

The utility of discrepancy coefficients was further explored in hypotheses 5 and 6, where it was predicted that subjects with more congruent Self and Ideal Self concepts would be less depressed and less anxious. Results of data analysis indicated that neither hypothesis was supported. There were no differences between high and low depressed and high and low anxious subjects on the basis of discrepancy coefficients.

Hypotheses 7, 8, and 9 further explored construct validity of the EQ through investigation of theoretically predicted relationships between self concept scores and measures of depression, anxiety, and life satisfaction. It was expected that the construct validity of the EQ would be demonstrated by the finding that: 1) subjects in the high depression group had lower self concept scores, 2) subjects in the high anxiety group would have lower self concept scores, and 3) subjects in the high life satisfaction group would have higher self concept scores. Results of data analysis indicated a clear pattern of support for construct validity on the basis of self concept scores. That is, subjects in the high depression and high anxiety groups did have lower self concept scores, while subjects in the high life satisfaction group had higher

self concept scores. These results occurred for both the Pictorial and the Word Self concept scores. With respect to Ideal Self scores, the data again revealed that the predicted relationships among measures did not occur.

Based on the data discussed thus far, several preliminary conclusions may be drawn. First, discrepancy coefficients do not appear to represent a very useful measure of self regard, and in fact may represent a more complex construct. Even disregarding the question of what discrepancy coefficients really mean, there would be questions regarding the predictive validity of such coefficients. Second, results of data analysis did provide support for the construct validity of the EQ, specifically with respect to the Pictorial and Word Self concept scores.

That the ecological self concept scores show promise as valid measures for older persons is supported in several ways by the data analysis. The hypotheses and results have already been discussed in terms of supporting construct validity through the presence or absence of theoretically expected relationships among measures. Another method of examining results of data analysis is in light of Campbell and Fiske's (1951) criteria for establishing construct validity, which specify that construct validity is determined through a process of establishing convergent and discriminant validity. Although the present investigation does not meet all the

formal criteria for a multitrait-multimethod analysis as described by Campbell and Fiske, some of their criteria are relevant. Results of the present investigation can be interpreted in terms of convergent and discriminant validity.

With respect to convergent validity, the requirement that measures of similar constructs correlate sufficiently highly with each other was met by Pictorial and Word Self concept scores ($r = .68$). With respect to discriminant validity, the requirement that the measures of different constructs should not correlate too highly with each other was again met by Pictorial and Word Self concept scores. The correlations between Pictorial Self concept and depression, state anxiety, trait anxiety, and life satisfaction were -.39, -.22, -.25, and .13 respectively. The correlations between Word Self concept and the same variables were -.28, -.30,-.30, and .25 respectively.

Another level at which present results can be examined for construct validity is in comparison with nonecological measures. Multivariate Analysis of Variance (MANOVA) yielded several interesting findings. With depression as the criterion variable, the overall MANOVA for nonecological measures only yielded no significant effects. However, the MANOVA for ecological measures did yield significant effects. It appears that ecological measures may be more sensitive to

factors related to depression (especially the situational factors) and thus are better able to discriminate among older persons varying in depression. This finding is especially encouraging in view of the fact that the present subject population was not significantly depressed. The mean depression score of this population was 35, while Zung reported mean depression scores for patients who are significantly or clinically depressed to be 59 (Zung, 1975).

If the ecological measures are able to discriminate among persons in the low depression category, then these measures should also discriminate among subjects at all levels of depression. However, this being an assumption, should be tested with both normal and clinically depressed groups.

Another interesting finding from the MANOVA analyses is that, while nonecological measures had significant age effects, the ecological measures did not. Nonecological measures probably contained items that created spurious age effects (e.g., choosing a career, going to work).

Several limitations of the present investigation should be noted. A primary limitation is in the computation of the Self concept scores. The present scores were based on the subject's endorsement of situations which are positively defining of self concept. The impact of including negatively defining items is unknown at this point. The rationale for using positive items only was based upon the expectation

that a score based on positive items would be useful in counseling with older persons. A "positive" score would not only place the focus upon the person's assets, it would also perhaps facilitate the ease with which older persons could identify positive and meaningful goals for themselves.

Another limitation of the current Self concept score is that the judges who rated the items as "positive" or "negative" ranged in age from 30 to 55. Further research should use judges who are older persons in order to develop age-appropriate norms.

In regard to further development of Ecological Q-sort, the present investigation indicates several directions for additional research. First, item analysis should be performed for all ecological measures. This would not only evaluate validity and reliability but would also identify any subscales or related subsets of items. Second, additional research should utilize a formal multitrait-multimethod analysis in order to examine performance of the measures under more stringent criteria for convergent and discriminant validity. Third, use of criterion measures that are also ecologically valid would be desirable. Fourth, since the present sample was an independent non-clinical, community living one, future studies should utilize some type of outpatient population. That older persons are rather unlikely to use mental health facilities has been well documented and was encountered in

the present investigation; the subjects in the present investigation were consistently unfamiliar with mental health services. This was also illustrated through unsuccessful attempts to obtain an outpatient sample from mental health agencies. Typically, the subjects in the agencies contacted had physical, cognitive, or psycological impairments so severe that they were unable to participate in the research study. An alternate means of obtaining the outpatient population might be to contact subjects through their family physicians.

It should also be noted that although the need for ecological validity in research may be highlighted for the elderly, it certainly is not unique to aged persons. Procedures for insuring ecological validity used in the present investigation might also be used to develop ecologically valid instruments for other age cohorts.

In conclusion, it appears that the EQ does have significant potential as a valid measure of self concept in the elderly. Most promising are the Pictorial and Word Self concept scores. Based on present results, it appears that further research and development of the EQ is warranted. Additionally, it also appears that the EQ could provide a valuable tool for assessment of older persons' self concept and for assessment of effectiveness of different types of interventions (Hayslip, 1983).

Appendix A

Descriptions of Situations in Ecological Q-sort[1]

1. You are laughing at a joke someone has just told. (Several women and men are sitting and laughing.)

2. You are worrying about your ability to bay a bill. (Woman with a frown on her face, holding a bill with a checkbook open on the table.)

3. You are thinking about your health. (Man with several bottles of pills, opening one bottle.)

4. You are visiting your doctor. (A man and women seated in chairs with a nurse standing in the hallway.)

5. You are talking with some children. (Man standing on sidewalk talking to children on bicycles.)

6. You are doing volunteer work. (Woman in a candy striper outfit, behind the counter in a hospital gift shop.)

7. You are playing cards with friends. (Two men and two women at a card table with cards in hand.)

8. You are driving to the store. (Man sitting behind the wheel of a car in the grocery store parking lot.)

9. You are reading. (Woman sitting on a couch in a living room reading a magazine. Perhaps show picture hanging behind couch.)

10. You are watching television. (Man and woman seated watching television.)

11. You are doing a hobby. (Man whittling a piece of wood or putting a model ship together.)

12. You are going for a walk by yourself. (Man walking through a deserted park.)

13. You are going to church. (Side view showing several men and women sitting in the first two rows listening to a minister who is standing behind a pulpit.

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[1]First statement for each situation is the written description that appears on the cards. Statements in parentheses are provided here in order to further describe pictoral content on the cards.

14. You are cleaning house. (Woman sweeping floor with a broom.)

15. You are looking for a new place to live. (Several men and women standing facing a younger son--in a suit--who is pointing to a row of apartments. In the background is a sign saying "New Apartment Complex.")

16. You are meeting new people. (Several women and men being introduced to each other.)

17. You are visiting a sick friend. (Man shown sitting at bedside of a woman in a hospital bed.)

18. You are taking care of a pet. (Woman setting down a dog's food dish, with the dog standing there.)

19. You are moving from your old home. (Man holding a hat in his hand, and woman holding a small vase standing in the doorway of a room which is empty except for one remaining box.)

20. You are spending time with your children. (Woman at airport being picked up by younger man and woman with several young children.)

21. You are slipping and falling. (Man shown in mid-fall with one foot in a puddle of water.)

22. You have been on a trip and are sitting alone at your camper late at night. (Man and woman sitting outside a Winnebego.)

23. You are adjusting to the death of your spouse. (Woman dressed in black putting flowers on a grave.)

24. You are picking up the telephone. (Man lifting receiver.)

25. You are at a funeral. (Several men and women shown seated facing a casket and a minister.)

26. You are caring for your potted plants. (Woman shown watering potted plants.)

27. You are showing the repairman the broken window that you want fixed. (Man pointing up to a broken window, with a younger man holding a tool kit at his side.)

28. You are attending a lecture. (Several men and women sitting in an audience being addressed by a woman in a suit.)

29. You are being pressured by a salesperson to buy some merchandise. (Woman standing slightly behind the door with a salesperson trying to show magazines.)

30. You are lying in your hospital bed. (Man lying in hospital bed.)

31. You are sitting on a bench in a classroom. (Woman and man seated behind desks facing a blackboard with other students and teacher in the classroom.)

32. You are shopping in a department store. (Man walking down an aisle with racks of clothes on one side and a mannequin on the other side.)

33. You are going to catch a cab/bus. (Woman stepping into a taxi.)

34. You are getting out of a van. (Women getting out of a van with a "Sr. Center" emblem, with other men and women shown seated in the van.)

35. You are going to collect Social Security. (Woman sitting at desk with male clerk.)

36. You are watering flowers and raking leaves. (Man shown doing yard work.)

37. You are visiting the bank. (Man and woman standing at the teller's window.)

38. You are sitting alone in your backyard. (Woman is sitting in lawn chair in backyard with trees and flowers visible.)

39. You are sitting by yourself in your bedroom. (Man sitting in a rocking chair beside the bed.)

40. You are on a vacation. (Two men and two women standing with others listening to a guide in a ranger's uniform.)

41. You are in your kitchen cooking. (Man at stove with several pots steaming.)

42. You are alone and have just finished breakfast. (Man with empty plate and a cup of coffee.)

43. You are visiting someone in a nursing home. (Woman talking to man in a wheelchair.)

44. You are walking in your vegetable garden. (Man and woman at opposite ends of a vegetable garden.)

45. You have just walked into your home. There are dirty dishes and trash in sight. (Man looking into living room which has plates with leftover food and empty soda cans sitting on T.V. trays.)

46. You are exercising. (Woman riding a bicycle.)

47. You are browsing through a family photo album. (Woman looking at pages with numerous photos on them.)

48. You are sitting and reading in the library. (Man sitting in chair, reading, surrounded by shelves of books.)

49. You are agruing with a person. (Woman talking to another woman. Woman talking has one hand on her hip with the other hand pointing and shaking her finger at the other woman.)

50. You are returning merchandise to a store. (Man shown setting a toaster on the counter at the complaint department.)

51. You have accidently locked your keys in your car while you went shopping. (Man looking inside car where keys are lying visible on the carseat.)

52. You are in the lobby of a hotel. (Man and woman facing the registration desk.)

53. You are driving your car in heavy traffic. (Woman shown on freeway surrounded by other cars.)

54. You are quarreling. (Man facing younger man and woman. All figures appear angry and elderly man has mouth open as if yelling and has fists clenched.)

55. You are in a swimming pool. (Men and women are in a pool with others splashing around.)

56. You are shopping in a supermarket. (Woman walking down an aisle with canned goods.)

57. You are offering money to one of your children. (Man handing several bills to a younger man.)

58. You are the passenger in a car with friends out for an afternoon drive. (Several elderly men and women in a car with country landscape visible outside.)

59. You are preparing a large meal for friends. (Woman shown at table with a number of dishes of food, vegetables, and a large stack of plates and silverware visible with others sitting around the table.)

60. You are moving into a new and unfamiliar home. (Woman shown with a room full of boxes.)

61. You are looking at the blackened remains of a burned out house. (Several men and women staring at a burned house with mostly smoldering rubble and a few posts still standing.)

62. You are in your kitchen with a freshly baked pie. (Woman shown with a pie.)

63. It is evening and you are sitting at the window looking at the lights of the city. (Man looking at window with city lights visible below.)

64. You are visiting the senior citizens center. (Women and men standing outside senior center.)

65. You have heard that a friend has recently died. (Man with tears in his eyes shown looking at a newspaper obituary column.)

66. You are on a date. (Man and woman sitting at table with glasses on table.)

67. You are making a will. (Woman on one side of a desk, with man in a suit on the other side. A legal size document is on the desk with the word "WILL" visible.)

68. You are eating a meal alone while watching television. (Man with T.V. tray and plate of food sitting in front of television.)

69. You are walking with your husband/wife. (Man and woman arm-in-arm walking.)

70. You are visiting the county fair and are standing in the building where the pigs are displayed. (Several men and women are standing looking at pens with pigs in them.)

Appendix B

The following instructions were given to subjects:

I'd like to show you some of the types of tasks that you'll be completing for this research. Basically, I'll be asking you to describe yourself by sorting some cards into categories. The first type of task will involve sorting these cards, which show a drawing of a person or people in various everyday situations. Then we'll be working with these smaller cards, each of which has on it an adjective or words that people may use to describe themselves. Then I'll be leaving some questionnaires with you to work on at your own pace. We'll set another appointment for next week, at which I'll pick up the completed questionnaires, and we'll do one more sorting task in which you'll use some cards to describe yourself. Those are the only things that you'll need to do to complete the research. I know that some of these tasks and questionnaires ask somewhat personal questions, so I want to assure you that you answers are completely confidential. Your responses will be identified only by a number. Also, if you should change your mind at any time, and not wish to continue, you simply need to let me know. Do you have any questions before we begin?

Instructions for Ecological Self Sort

In this task, as I mentioned earlier, I'll be asking you to describe yourself by sorting a set of cards into categories. Each card in this stack shows older persons in various everday situations. What I'd like you to do is go through this stack, one card at a time. Look at each card, imagine yourself in that situation, and decide how much that situation describes you and your life the way that it is now. Place each card into one of the five categories, depending on how characteristic or uncharacteristic the situation is of you and your life now. The categories that you'll be using are these: Most Characteristic, Fairly Characteristic, Neither Characteristic nor Uncharacteristic, Fairly Uncharacteristic, or Most Uncharacteristic. Do you have any questions? If not, go ahead and begin, and place each card into one of these categories depending on how characteristic it is of you.

Instructions for Ecological Ideal Sort

I have here another stack of cards exactly like the first stack you completed. I'd like you to sort them into categories again, only this time, I'd like you to think about them in a different way. This time, I'd like you to think of how things

Appendix B--Continued

would be for you if they could be ideal now. In other words, sort these cards according to the way you would like things to be. What things would be characteristic and what things would be uncharacteristic? I'd like you to go through the stack of cards now, thinking of how you'd like things to be ideally, and sort the cards into these same categories: Most Characteristic, Fairly Characteristic, Neither Characteristic Nor Uncharacteristic, Fairly Uncharacteristic, or Most Uncharacteristic, depending on how you would like things to be.

Appendix C

Summary of Analysis of Variance for All Self Concept Measures by Criterion Variables

	F-Values			
Measure	Depression	Life Satisfaction	State Anxiety	Trait Anxiety
Pictorial Discrepancy Coefficient	3.92*	1.22	.86	3.08
Pictorial Self Concept Score	9.80**	1.42	.35	.74
Pictorial Ideal Self Concept Score	.33	.37	.68	1.02
Pictorial Self-Ideal Self Difference Score	2.97	3.01	.16	1.67
Word Discrepancy Coefficient	11.36***	7.67**	6.92**	5.23*
Word Self Concept Score	2.45	5.56*	4.18*	2.99
Word Ideal Self Concept Score	.42	.88	.46	.67
Word Self-Ideal Self Difference Score	3.99*	7.38**	5.67*	3.23
Block Discrepancy Coefficient	2.24	2.35	18.46***	12.86***
Block Self Concept Score	1.98	1.26	25.16***	8.27**
Block Ideal Self Concept Score	1.49	1.97	.84	.77
Block Self-Ideal Self Difference Score	4.82*	4.5*	9.69*	1.88
Rosenberg Self Esteem Score	.05	2.53	6.31*	10.59***

Appendix C--Continued

	F-Values			
Measures	Depression	Life Satisfaction	State Anxiety	Trait Anxiety
Tennessee Total Positive Score	7.48**	5.64*	15.15***	6.59***

*p < .05.

**p < .01.

***p < .001.

Appendix D

Cell Means for All Self-Concept Measures by Categories of Criterion Variables

	Depression				Life Satisfaction				State Anxiety				Trait Anxiety			
	Lo		Hi		Lo		Hi		Lo		Hi		Lo		Hi	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Pictorial Discrepancy Coefficient	.74	.12	.69	.09	.71	.08	.72	.14	.73	.09	.69	.12	.73	.02	.70	.09
Pictorial Self Concept Score	105.22	6.04	100.19	5.86	102.00	5.50	103.00	7.40	104.00	6.20	102.00	6.60	104.33	6.20	100.25	6.30
Pictorial Ideal Self Concept Score	124.63	58.02	114.58	9.40	114.00	8.40	112.00	9.60	114.00	6.50	112.70	10.88	112.70	9.80	114.67	7.9
Pictorial Self-Ideal Self Difference Score	9.40	5.60	13.80	6.70	12.70	6.60	9.90	6.17	11.05	5.80	12.17	7.20	10.38	5.80	12.80	7.16
Word Discrepancy Coefficient	.75	.12	.69	.12	72.27	10.45	76.10	15.87	.75	.13	.72	.11	.72	.14	.72	.1
Word Self Concept Score	104.54	7.20	99.90	6.70	100.67	6.61	105.00	7.90	103.91	7.23	100.21	7.14	103.81	6.96	100.17	7.51
Word Ideal Self Concept Score	124.63	58.02	114.58	9.40	123.60	52.90	113.37	7.20	122.01	55.80	115.71	8.55	123.06	58.31	115.79	9.1
Word Self-Ideal Self Difference Score	11.27	6.34	16.92	16.32	16.32	12.87	8.84	6.12	10.50	6.60	17.10	14.63	11.60	7.10	15.96	14.13
Block Discrepancy Coefficient	.59	.13	.52	.18	.53	16.6	.58	15.5	.63	.10	.48	.16	.62	.13	.49	.16
Block Self Concept Score	160.32	11.05	154.57	20.7	156.26	18.9	159.24	12.9	165.60	13.09	149.02	15.85	162.84	16.45	152.21	15.25
Block Ideal Self Concept Score	170.60	6.60	188.26	121.22	170.00	8.80	191.66	129.81	171.97	5.50	186.81	121.48	171.76	9.57	180.60	130.87
Block Self-Ideal Self Difference Score	11.83	9.63	18.06	17.33	16.71	14.67	10.84	10.68	9.48	9.43	19.31	15.07	11.94	13.80	16.61	12.69
Rosenberg Self Esteem Score	30.80	4.28	20.92	4.2	74.38	9.6	78.66	11.6	80.23	10.81	72.26	9.04	80.23	10.81	72.27	9.04
Tennessee Total Positive Score	354.68	27.52	335.51	29.06	440.93	24.52	357.16	33.65	359.08	23.79	336.00	29.95	455.00	27.80	335.00	28.8

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