

## VI. Changes in Personality Observed in Questionnaire Data from the Riegel Questionnaire on Rigidity, Dogmatism, and Attitude toward Life

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### *Introduction and Previous Research*

A review of research on changes in attitudes during old age led *Riegel and Riegel* (1960) to the construction of their own attitude scales. The items were taken from *Hardesty* (1954), *Rokeach et al.* (1955) and *Burgess et al.* (1953), and from original item formulations, especially for the interest scales and the attitude toward life scales. The scales consisted of Likert-type items: 6 for general rigidity ( $R_1$ ), 6 for personal rigidity ( $R_2$ ), 3 for anxiety ( $D_3$ ), 4 for intolerance ( $D_4$ ), 6 for general dogmatism ( $D_5$ ), 7 for pro- and retrospective attitude toward life ( $L_6$ ), 7 for contemporaneous attitude toward life ( $L_7$ ), and 14 interest items (I). The items were formulated in English as well as German. It should be noted that in the Bonn Longitudinal Study of Aging (BLSA) the anxiety scale ( $D_3$ ) was not used, the interest (I) scales were administered only once, and the  $L_7$  scale was modified by excluding the items: 'I feel very old' and 'I feel that no one cares what happens to me'. With the exception of the work by *Riegel* and associates, the studies reported on below were carried out with the shortened version of the questionnaire. A higher score in  $R_1$ ,  $R_2$ ,  $D_4$ , or  $D_5$  means an increase in the respective attitudes and, due to a departure from *Riegel and Riegel's* (1960) scoring method, a higher score in  $L_6$  or  $L_7$  is taken to mean a more positive orientation toward life in our studies.

### *Reliability and Stability Coefficients of the Riegel Scales*

These coefficients, using a formula developed by *Heise* (1972), for the four measurement times of the BLSA are given in table I (*Schmitz-Scherzer*, 1975 c).

Although the results do not reveal the Riegel scales to be very precise and reliable measuring instruments, they are roughly comparable to the test-retest coefficients reported by *Riegel et al.* (1967). Factor analysis of the scales over three times of measurement yielded two factors: a rigidity factor ( $R_1$ ,  $R_2$ ,  $D_5$ ) and an attitude toward life factor ( $L_6$ ,  $L_7$ .) The intolerance scale  $D_4$  just barely

Table I. Reliability and stability of the Riegel scales according to Schmitz-Scherzer (1975c)

Variable	Total		Men		Women	
	reliability	stability	reliability	stability	reliability	stability
Riegel R <sub>1</sub>	0.694	0.880	0.681	0.908	0.715	0.852
Riegel R <sub>2</sub>	0.701	0.762	0.671	0.846	0.730	0.673
Riegel D <sub>4</sub>	0.454	0.461	0.693	0.342	0.214	0.912
Riegel D <sub>5</sub>	0.650	0.575	0.491	0.949	0.932	0.277
Riegel L <sub>6</sub>	0.661	0.524	0.623	0.620	0.626	0.612
Riegel L <sub>7</sub>	0.692	0.604	0.768	0.934	0.613	0.725

met the communality requirements allowing for its interpretation as a rigidity factor. A factor structure comparison showed these two factors to be sufficiently similar over a measurement period of 5 years (Angleitner, 1974a), and a study using the generalizability concept of Gleser *et al.* (1965) indicates that these results could be replicated for other measurement times (Angleitner, 1974b).

In the original analysis of the questionnaire in 1960, Riegel and Riegel suggested that single and combined scores could be used. By combined scores they mean the sums of the scale scores for R<sub>1</sub>+R<sub>2</sub>, D<sub>4</sub>+D<sub>5</sub>, and L<sub>6</sub>+L<sub>7</sub>. More recent results by Angleitner (1974a, b) suggest that it is not clear whether these scale pairs measure the same dimensions and it therefore does not seem justified to use the summation procedure.

#### *Construct Validity of the Riegel Scales*

There is also some information on the construct validity of the Riegel scales. The rigidity and dogmatism scales show significant correlations with other rigidity, dogmatism and intolerance scales constructed by Brengelmann and Brengelmann (1960a, b) as shown in table II. These correlations can be taken as evidence for sufficient construct validity of all but one (D<sub>4</sub>) of the Riegel scales.

The finding of a negative relationship between rigidity and intelligence measurements has been reported by a number of authors in previous research (Schaie, 1958; Brengelmann and Brengelmann, 1960b; Chown, 1961) and gained new support from our results in respect to the Riegel scales. Our study showed that scales measuring rigidity or dogmatism correlated negatively with intelligence scores on verbal WAIS and Raven CPM (Angleitner, 1972). Riegel *et al.* (1962) found a similar relation between rigid attitudes and educational level.

For the scales L<sub>6</sub> and L<sub>7</sub> measuring attitude toward life and a rating scale of

Table II. Correlations between Brengelmann scales (NR = rigidity; DO = dogmatism; IA = intolerance) and Riegel scales (R<sub>1</sub>, R<sub>2</sub>, D<sub>4</sub>, D<sub>5</sub>)

Variable	Sample						
	70-year-old subjects (Angleitner, 1972)			80-year-old subjects (Angleitner, 1972)			BLSA
	NR	DO	IA	NR	DO	IA	NR
R <sub>1</sub>	0.39	0.38	0.52	0.48	0.33	0.60	0.31
R <sub>2</sub>	0.40	0.26	0.34	0.33	0.19	0.41	0.22
D <sub>4</sub>	0.34	0.36	0.30	0.18	0.30	0.31	-0.03
D <sub>5</sub>	0.31	0.41	0.38	0.29	0.36	0.35	0.23

Table III. Correlations of the Riegel scales with age

Sample	Scale					
	R <sub>1</sub>	R <sub>2</sub>	D <sub>4</sub>	D <sub>5</sub>	L <sub>6</sub>	L <sub>7</sub>
<i>Riegel and Riegel</i> (1960) 55- to 75-year- old and older subjects	0.19 <sup>1</sup>	0.20 <sup>1</sup>	0.08	0.06	0.20 <sup>1</sup>	0.10 <sup>1</sup>
BLSA 65- to 84-year- old subjects	0.12	0.12	0.14	0.23 <sup>1</sup>	-0.08	-0.07
<i>Angleitner</i> (1972) 52- to 94-year- old subjects	0.15 <sup>1</sup>	0.16 <sup>1</sup>	0.05	0.25 <sup>1</sup>	-0.28 <sup>1</sup>	0.04

<sup>1</sup> Significance at  $p < 0.01$ .

attitude toward the future based on personal interviews, a stable positive correlation was found. The correlations averaged 0.38 for  $L_6$  and 0.29 for  $L_7$  over four periods of measurement. The scales  $L_6$  and  $L_7$  also correlate negatively with the following series of measures: subjective health rating, state of health as rated by a physician, anxiety (MAS), and neuroticism (N from ENNR). As a group, persons who felt themselves to be in poor health as well as those with high anxiety and neuroticism scores had characteristically more negative attitudes toward life.

### *Research Findings with the Riegel Questionnaire*

#### *Cross-Sectional Studies*

In their study, *Riegel and Riegel* (1960, p. 185) found 'a consistent rise in rigidity over the whole age span'. This increase was also more marked, especially for men, on those scales consisting of general stereotyped phrases, namely general rigidity ( $R_1$ ) and general dogmatism ( $D_5$ ). For scales with items formulated in the first person ( $R_2$ ,  $D_3$ ,  $D_4$ ) this trend was not so marked. Their analyses also revealed a more negative attitude toward life ( $L_6$ ,  $L_7$ ) with advancing age, which was not quite regular, particularly among women. Higher scores were obtained by women on the interest scales. Women also exhibited a greater degree of anxiety ( $D_3$ ) and intolerance ( $D_4$ ) than men. Table III shows the correlations of the questionnaire scales with age as obtained in the studies by *Riegel and Riegel* (1960), *Angleitner* (1972), and from the present investigation of the BLSA sample.

The correlations between the rigidity and intolerance scales differ somewhat, with only the data from *Riegel and Riegel* (1960) and *Angleitner* (1972) indicating an increase in rigidity with advancing age. Further differences become evident in the  $D_5$  and  $L_7$  scales. The difference in sign for  $L_6$  is an artifact produced by different scoring weights. In the BLSA sample, the endorsement of generally formulated dogmatism items ( $D_5$ ) increased markedly with increasing age. The postulated negative attitude toward life could not be replicated with the BLSA.

In a multiple analysis of variance design with the treatments age, sex, and educational level, *Angleitner* (1972) found that compared to the younger age group (52–75 years), higher age (76–94 years) was accompanied by higher rigidity and dogmatism scores ( $R_1^{ss}$ ,  $R_2^s$ ,  $D_5^{ss}$ ; s = significant at the  $p < 0.05$  level, ss = significant at the  $p < 0.01$  level) and a more negative attitude toward life on the  $L_6$  scale in which, according to its authors, 'some expectancies about the future are expressed or in which the present is valued in terms of the past' (*Riegel and Riegel*, 1960, pp. 192–193). Educational level was associated with general rigidity ( $R_1^{ss}$ ). Persons who finished high school or university-like institutions were much less inclined to endorse the generally phrased stereotyped  $R_1$

sentences than others with incomplete secondary or advanced education. Men had higher scores in general rigidity ( $R_1^s$ ) than women. However, by controlling health data and intellectual achievement, these effects were reducible.

In a study by *Erlemeier and Angleitner* (1971), comparing the BLSA sample with the financially and educationally better situated sample used by *Angleitner* (1972), it could be shown that the two samples differed most notably in intelligence as measured by the Raven CPM and on the scales  $R_1$ ,  $R_2$ , and  $D_4$ . The longitudinal sample, seen as having lower socioeconomic status, could be described as more rigid and intolerant compared with the *Angleitner* (1972) sample with higher SES. The age effects over both samples are similar to the findings of *Angleitner* described above. For men and women a difference was found on  $L_7$ , with men showing a more positive attitude toward life than women, i. e. more endorsement of 'statements on the subject's present feeling of acceptance, usefulness, and well-being' (*Riegel and Riegel*, 1960, p. 184).

#### *Longitudinal Studies*

After 5 years, 202 persons of the original sample ( $n = 380$ ) used by *Riegel and Riegel* (1960) could be retested. 62 persons were deceased, 32 were too ill, and 84 refused to participate, as reported by *Riegel et al.* (1967). Various subgroup comparisons between the mean scores at the first testing of the original samples revealed that retested subjects 'represent biased samples'. Compared to the original group of participants as a whole and especially those not retested, subjects who returned for retesting are less rigid, slightly less dogmatic, and more positive in their attitudes toward life. In an analysis of cohort differences (persons grouped by birth dates in 5-year periods, e. g. 1897–1901, 1892–1896, etc.) and time differences between the first and second testing of retestees, *Riegel et al.* (1967) found significant cohort differences for the scales  $R_1^s$ ,  $R_2^s$ ,  $D_5^{ss}$ ,  $L_7^s$  and significant time differences for the scales  $R_1^{ss}$ ,  $R_2^{ss}$ , and  $L_7^{ss}$ . Cohort  $\times$  time interactions were established for  $R_2^s$  and  $D_5^s$ . Higher age was associated with more rigidity and a more negative attitude toward life but with slightly less dogmatism than was to be expected on the basis of cross-sectional data. For the lower age levels, longitudinal trends closely matched the mean values from cross-sectional comparisons.

#### *Topics for Investigation*

Previous findings suggest the investigation of the following four points: (1) Over a period of 7 years, are longitudinal changes to be expected in measurements obtained from scales purporting to measure rigidity, dogmatism, attitude toward the present, and attitude toward the past and future? (2) Are such changes expected to occur to the same extent in groups with different socio-

economic status (upper versus lower) or sex? (3) Do observed differences persist when intellectual ability and state of health as diagnosed by a physician are controlled? (4) How do the present sample's scores on these scales compare with those of a control sample selected in a similar manner?

### *Methods, Subjects, and Procedures*

#### *Longitudinal Study*

Data for this longitudinal study (computations with the Datatext program were performed on an IBM 360 at the 'Institut für Instrumentelle Mathematik', Friedrich-Wilhelm-Universität, Bonn) were obtained from 119 persons (63 men and 56 women) from the BLSA sample described in more detail in Chapter 2. In addition, a control sample of 27 men and 30 women, comparable to the longitudinal sample in age, sex, education, and other personal statistics, were tested at the last session in 1972/73. Measurement times for the longitudinal sample were in 1965/66, 1967/68, 1969/70, and 1972/73.

#### *Shortened version of the Riegel Scales*

Data were obtained from the shortened version of scales developed by *Riegel and Riegel* (1960). Additional data in this study are the summed raw scores on WAIS verbal subtests; a physician's rating of each subject's state of health, from 1 = excellent to 5 = very poor, and SES, taking an experimenter rating of 1-2 as low, 3 as medium and 4-5 as high.

#### *Three-Way Analyses of Variance*

Three-way analyses of variance were computed with the treatments (a) sex (masculine versus feminine); (b) SES (1-2 versus 3 versus 4-5); and (c) time (measurement points I-IV) as repeated factor. The age factor was deleted from this study, because it made the cell frequencies too small and unbalanced for computation. Preliminary four-way analyses of variance further justify this procedure, since no significant effects were produced by the age factor. We have used the 'fixed-effects' model approach here (*Hays, 1973*), which means that our generalizations are limited to the sample used. Taking the Riegel scales as independent variables, a three-factor analysis of variance was computed for each scale.

A check of the homogeneity of variances indicated that particularly for SES the variances were frequently most unhomogeneous. Computations were nevertheless considered justifiable due to the robustness of the F test in the fixed model (*Hays, 1973*). When the number of cases is not the same for all cells, the method of unweighted means applies; i. e., row and column means 'are simple means of the cell means regardless of the number of cases of the cells' (*Armor and Couch, 1972, p. 113*). As *Armor and Couch* (1972, p. 112) put it, this 'method results in approximations as long as the cell N-s are not too unequal (no more than a 4 to 1 ratio or so)'.

Finally, analyses of covariance were then carried out (Winer, 1971, pp. 605 ff.), with the covariates 'sum of all verbal WAIS subtest scores' and 'physician's rating of health'. The unequal cell numbers made a conclusive check of regression homogeneities impossible. Consequently, the results of the analyses of covariance should be interpreted cautiously.

#### *Longitudinal and Control Sample*

For a comparison of our longitudinal sample with a control sample, we computed an analysis of variance with the treatment 'sample' as factor.

#### *Results of the Analyses of Variance*

Due to some missing data especially in the SES and health ratings, the analyses of variance are based on 93 persons (50 men and 43 women; 23 persons with low SES, 55 with middle and 15 with high SES). The means are weighted according to the cell frequencies.

#### *Time*

The scales  $R_1$ ,  $R_2$ , and  $D_5$  yielded significant results. Mean scores on these scales at the four times of measurement are shown in table IV.

In contrast to the findings of Riegel *et al.* (1967), scores decreased over the total longitudinal interval on scales formulated in generalized terms ( $R_1$ ,  $D_5$ ) and increased on personal rigidity ( $R_2$ ), with items stated in the first-person form. The lowest scores were obtained mostly from the second session. Figure 1 illustrates the significant interaction between sex and time on the  $R_2$  scale. Whereas women generally scored lower than men in  $R_2$ , they scored higher at measurement point IV.

Table IV. Mean scores on  $R_1$ ,  $R_2$ , and  $D_5$  at all times of measurement for the BLSA

	Measurement point			
	1965/66	1967/68	1969/70	1972/73
$R_1$	17.8	16.4	17.0	17.4
$R_2$	14.3	13.8	14.8	15.8
$D_5$	17.4	16.1	15.9	16.3

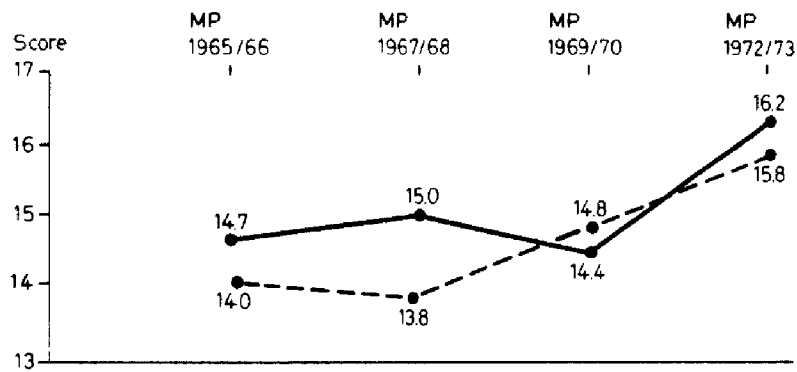


Fig. 1. Mean scores on 'personal rigidity' ( $R_2$ ) between men (---) and women (—) at four measurement points (MP).

Table V. Mean scores of the SES groups on  $R_1$  at all four measurement points

SES	Measurement point				Overall
	1965/66	1967/68	1969/70	1972/73	
Lower	19.4	17.8	18.2	19.8	18.8
Middle	18.3	17.5	17.8	18.2	18.0
Upper	15.9	13.9	15.0	14.1	14.7

Table VI. Mean scores of the SES groups on  $R_2$  at all four measurement points

SES	Measurement point				Overall
	1965/66	1967/68	1969/70	1972/73	
Lower	16.6	15.6	17.1	17.7	16.8
Middle	14.8	14.4	14.7	15.6	14.9
Upper	11.6	11.4	12.6	14.1	12.4

### Socioeconomic Status

A significant effect was found for the scales  $R_1$  and  $R_2$ . Mean scores on general ( $R_1$ ) and personal rigidity ( $R_2$ ) at all measurement points are presented in tables V and VI.

Persons who are classified as lower SES endorse the  $R_1$  items, all of which are expressed in generalized phrases, much more often than persons rated as belonging to middle and upper groups. The results suggest that those subjects



Table VII. Mean scores of men and women on the L<sub>7</sub> scale on attitude toward life at all measurement times

	Measurement point				Overall
	1965/66	1967/68	1969/70	1972/73	
Men	14.9	14.9	14.8	14.8	14.8
Women	13.5	13.0	12.9	12.9	13.1

classified as having lower socioeconomic status also express agreement with personally phrased stereotypes more readily than their counterparts classified as middle and upper SES.

#### Sex

The L<sub>7</sub> attitude toward life scale produced a significant effect which is illustrated by the means in table VII. Men produced higher scores than women, which indicates that they had a more positive orientation toward life.

### Results of Analyses of Covariance

#### Verbal Intelligence

With verbal intelligence as a covariate, no significant effects ( $p < 0.1$ ) were observed on the R<sub>1</sub> and R<sub>2</sub> scales, where SES was a significant effect with uncontrolled verbal intelligence. There are contrary trends between the sexes in their attitude toward life (L<sub>6</sub>) which become more pronounced when verbal intelligence is controlled. Whereas men, who are more negative in their views at the first measurement point, increase in their scores, which means a more and more positive orientation, women, initially more positive in their evaluations, show a decrease in their scores, and this can be interpreted as a more and more negative evaluation of the past and future over the four measurement points. The other reported effects could all be reproduced if verbal intelligence was controlled.

#### Physician's Health Rating

Ratings by physicians of the subjects' health status reflected longitudinal changes. Observed changes in Riegel scores could be artifacts due to the uncontrolled variable of physical well-being. To rule out this possibility, the analyses of variance were repeated. Taking health data for some subjects caused the

*Table VIII.* Mean scores on Riegel scales and their standard deviations for samples BLSA (Bonn Longitudinal; n = 119), C (control; n = 57), A<sub>1</sub> (70-year olds, from *Angleitner*, 1972; n = 137), and A<sub>2</sub> (80-year olds, from *Angleitner*, 1972; n = 156)

	BLSA		C		A <sub>1</sub>		A <sub>2</sub>	
	mean	SD	mean	SD	mean	SD	mean	SD
R <sub>1</sub>	17.8	4.8	18.6	3.5	14.4	4.8	16.4	4.5
R <sub>2</sub>	15.9	4.4	16.3	5.0	10.4	5.1	12.0	5.2
D <sub>4</sub>	4.7	3.5	4.5	2.5	3.2	2.5	3.5	2.4
D <sub>5</sub>	16.3	3.5	17.0	4.3	14.6	3.9	16.6	3.8
L <sub>6</sub>	14.9	4.5	15.5	5.2	14.4	5.1	12.0	5.0
L <sub>7</sub>	14.1	3.3	14.0	4.0	13.3	3.9	13.4	3.3

sample to shrink to 87 persons. Thus, the sample size reduction itself may have influenced the results. All observed effects were replicated. However, the regression coefficients for the health status bound some of the person variance for the scales R<sub>2</sub><sup>SS</sup>, D<sub>5</sub><sup>SS</sup>, and L<sub>7</sub><sup>S</sup>.

#### *Comparison of the Longitudinal and Control Samples*

The control sample and the longitudinal sample did not differ significantly from each other in regard to their scores on the Riegel scales at the last time of measurement. A further comparison is offered in table VIII, where data from the longitudinal and control samples are presented with data from the *Angleitner* (1972) sample consisting largely of subjects with higher socioeconomic status. Differences between the present control and longitudinal samples, on the one hand, and the *Angleitner* (1972) samples, on the other hand, follow the lines postulated by *Erlemeier and Angleitner* (1971). The samples with a higher SES rating (A<sub>1</sub> and A<sub>2</sub>) express less rigid, intolerant, and dogmatic attitudes, while also holding more negative attitudes toward life than the longitudinal and the control sample.

#### *Discussion*

(a) Previous investigations reported little evidence for longitudinal changes over three measurement times from 1965/66 to 1969/70, since longitudinal changes could only account for about 1% of the total variance. The results of the

present study lead to the same conclusions for an extended interval of time with four measurement times ranging from 1965/66 to 1972/73. The scales  $R_1$ ,  $R_2$ , and  $D_5$  yield a replicable time effect, but it accounts for only 1–2% of the total variance. Statistically confirmed though it may be, this effect seems inconsequential in terms of the total variance. The other factors account for 1–10% of the total variance, by no means a very promising result.

It can be pointed out that the scores on the scales which are stated in generalized phrases ( $R_1$ ,  $D_5$ ) generally decrease, with their lowest points at the second and third measurement points and reflect a slight increase at the fourth measurement point. However, this increase did not reach the level of the first measurement point. But the fact that a new experimenter team administered the test at the fourth measurement point still raises questions as to how the trends in the Riegel scales are best interpreted, in terms of rigidity, etc., or in terms of the changed testing situation.

An increase in rigidity and dogmatism scores with advancing age, such as that reported for the  $R_1$  and  $D_5$  scales by *Riegel and Riegel* (1960) and *Erlemeier and Angleitner* (1971), could not be found for the 7-year period of longitudinal testing. In fact, the significant time effect probably has more to do with a decrease in rigidity scores especially from those testing sessions conducted under equivalent conditions.

However, there was an increase for this time period in 'personal rigidity' ( $R_2$ ), which suggests that items stated in the first person and relating to concrete situations (by asking what actions the subject would take personally) are more endorsed over our 7-year period. The  $L_7$  scale failed to produce a significant time effect, a finding which is also incongruent with the results of *Riegel et al.* (1967).

All time effects remained significant when the variables 'verbal intelligence' and 'health' were controlled. This indicates that these reported effects are not produced by changes in verbal intelligence or health. The importance of these variables was pointed out by *Angleitner* (1972, 1974b) from findings in his cross-sectional study and it seems that they only apply for cross-sectional samples, but not for a longitudinal sample, which could show more and more selection with the number of measurement points. To prove the latter point we computed the means of our three retested groups in the Riegel scales which they got at the first measurement point. The results are shown in table IX.

It can be said that our sample is not as biased as the results of *Riegel et al.* (1967) would suggest. There is almost no decline over the various retested groups in our attitude scales which would allow us to view our BLSA sample as a 'biased sample' with regard to the Riegel measures. It must be concluded that the postulated claims of controlling the intelligence and health variables regarding rigidity, dogmatism and attitude toward life scales are not as important as was hypothesized from findings of cross-sectional studies.

*Table IX.* Means at the first testing of the original sample (n = 211) and the retested groups (n = 176 at the second measurement point, n = 143 at the third measurement point, n = 115 at the fourth measurement point) on the Riegel scales

	First measurement point			
	n = 211	n = 176	n = 143	n = 115 (BLSA)
R <sub>1</sub>	18.3	18.1	18.2	17.9
R <sub>2</sub>	15.2	15.3	15.2	14.7
D <sub>4</sub>	4.8	4.8	4.9	4.9
D <sub>5</sub>	14.3	14.4	14.5	14.7
L <sub>6</sub>	14.3	14.4	14.5	14.7
L <sub>7</sub>	14.1	14.5	14.3	14.4

(b) Only few results obtained by cross-sectional comparisons (*Angleitner, 1972; Erlemeier and Angleitner, 1971; Riegel and Riegel, 1960; Riegel et al., 1967*) could be replicated in this longitudinal study. Longitudinal results remained significant when the variables 'verbal intelligence' and 'health' were controlled as did the above mentioned time effects in the scales R<sub>1</sub>, R<sub>2</sub>, and D<sub>5</sub>, the interaction between sex and time in the R<sub>2</sub> scale, and the sex effect in the attitude toward life scale (L<sub>7</sub>). When it came to agreeing with statements phrased in the first-person singular concerning personal reluctance to engage in new activities, as is the case with R<sub>2</sub> items, the financially better-off subjects in our sample showed less reluctant than subjects with lower socioeconomic status. The same is true also for the items of R<sub>1</sub>, which are more generally stated. The higher the SES, the lower was the acceptance of the stereotyped phrases. But when verbal intelligence was controlled, this finding could not be replicated. This indicates that the endorsement of stereotyped phrases, regardless of whether they are stated in 'I' or a more general form, is moderated by verbal intelligence, which is generally assumed to be positively correlated with SES.

(c) The finding by *Erlemeier and Angleitner (1971)* that men generally showed a more positive evaluation of their view of present life than women, as reflected in scale items, was also substantiated in this analysis.

### Summary

Longitudinal data on an attitude questionnaire by *Riegel and Riegel (1960)* from four times of measurement, 1965/66, 1967/68, 1969/70, and 1972/73, were obtained from 119 subjects. Analyses of variance with the factors sex (masculine/feminine), socioeconomic

status (upper/middle/lower), and time (I, II, III, IV) yielded significant time effects for both rigidity scales  $R_1$  and  $R_2$ , and the dogmatism scale  $D_5$ , significant interactions between sex and time on the  $R_2$  scale, and a significant effect for sex on the  $L_7$  attitude toward life scale. Control of the variable 'verbal intelligence' represented by summed scores on WAIS verbal subtests eliminated the socioeconomic status effect on the  $R_1$  'general rigidity' and  $R_2$  'personal rigidity' scales found in preliminary analyses. A comparison of the longitudinal sample with a similarly recruited and comparable control sample showed no differences in respect to the data of *Riegel and Riegel* (1960).