are eliminated, thereby shortening the scale to those items which are relevant, and best measure the social support offered by trade unions (Kerlinger, 1973). For example, if an item, when deleted, would increase the overall reliability of the scale, then the item should be deleted (Anastasi, 1982).

Reliability

Reliability refers to the consistency of scores obtained by the same persons when re-examined with the same test on different occasions, or with different sets of equivalent items. This concept of reliability underlies the computation of the error of measurement of a single score, whereby one can predict the range of fluctuation likely to occur in the individual's score as a result of irrelevant chance factors (Anastasi, 1982). As all types of reliability are concerned with the degree of consistency between two independently derived sets of scores, they can be expressed in terms of correlation coefficients (Kerlinger, 1974). A correlation coefficient (r) expresses the degree of correspondence, or relationship between two sets of scores (Kerlinger & Pedhazur, 1973).

Two measures of reliability were carried out to establish internal consistency; Cronbach's alpha and split-half reliability. The alpha coefficient (or Cronbach's alpha) is a generalised formula whose purpose is to find the variance of all individuals' scores for each item, and then to add these variances across all items (Anastasi, 1982). Cronbach's alpha was established for the final 25-item TUSS scale. Split-half reliability was computed for the final TUSS scale. The split-half coefficient is based on a planned split designed to yield equivalent sets of items (Anastasi, 1982). Test re-test reliability was assessed by re-administering the TUSS scale after seven weeks of initial testing to a sub-sample of 20 randomly selected subjects.

Validity

The validity of a test concerns what the test measures and how well it does so (Anastasi, 1982), and it enables the researcher to infer from the results. The validity of a test cannot be reported in general terms (i.e., no test can have a high validity). Thus the validity must be established with reference to a particular use for which the test is being considered (Kerlinger, 1974).

Two types of validity were established in the present study; concurrent and construct validity.

Concurrent validity: Correlates of the TUSS scale

To establish concurrent validity the Pearson Product-Moment Correlation Coefficient was performed by correlating the TUSS scale with the Trade union Commitment scale, and the Trade Union Instrumentality scale and the Perceived Social Support from friends scale. The Pearson correlation takes into account not only the subjects' position in the group, but also the amount of his/her deviation above or below the group mean (Anastasi, 1982).

Construct Validity: Known-Group differences

Known-group differences were established using *t*-tests and one-way analysis of variance (ANOVA).

The *t*-test is used in this study to compare the means of two groups. For example, if two sample means are far enough apart, the *t*-test will yield a significant difference, thus permitting the researcher to conclude that the two populations probably do not have the same mean (Huck, Cormier & Bounds, 1974). An analysis of variance is used to test the significance of the differences between the means of a number of different samples (Kerlinger & Pedhazur, 1973). The formula is:

$$V_t = V_b + V_w$$

The total variance (V_t) is equal to the sum of the 'between group' variance (V_b) and the 'within group' variance(V_w). The between group variance is an index of the variability of the different group variance, and to calculate this one computes a grand mean from the sum of the different sample means. Within group variance refers to differences between individuals in the same group (i.e., subjects given the same treatment condition) (Anastasi, 1982). A t-test was used to compare the means of the two groups to assess significant differences. T-tests were carried out with sex and education levels. The ANOVA has the same general purpose as the t-test, that is, to compare groups in terms of the mean scores (McCall, 1970). An ANOVA is an extension of the t-test, but the difference between the two procedures is that the ANOVA is used to compare more than two groups (Kerlinger, 1974). ANOVA's were performed on racial groups, trade union division and job titles.

Construct Validity: Factor Analysis

Construct validity was also established by performing a factor analysis. A factor analysis is a method for determining the number and nature of the underlying variables among larger numbers of measures (Kerlinger, 1974). More specifically, it is a method for determining underlying variables from sets of measures. It may also be called a method for extracting common factor variances from sets of measures (Kerlinger, 1974). Thus a factor analysis was performed on the trade union social support scale to see whether House's (1981) four different types of social support would yield four different factors.

RESULTS

Item Analysis

An item analysis was performed for the 55-items of the TUSS scale to refine the scale so that the best items remained. Five exclusion criteria were adopted.

1. Any item that had a response rate in any one category that was less than 80% was deleted (item 30 was discarded from the TUSS scale)

2. Any item that would increase the overall reliabilitywas deleted (items 8, 22, 29, 45 were discarded from the TUSS scale).

3. Any item that does not correlate sufficiently with the known dimensions (3 related constructs) and does not differentiate (with the use of t-tests and ANOVA's) were discarded from the TUSS scale (items 1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 17, 26, 27, 28, 31, 33, 36, 42, 48, 49, 50, 54 were deleted).

4. Any item that has 30% or more responses missing were discarded from the TUSS scale (items 38 and 52 were deleted).

The final TUSS scale consists of 25 items (see Table 2).

Table 2

Results showing items of TUSS with number of replies, correlations with original and final TUSS, distribution of replies, and correlations of related constructs (correlations expressed as correlation coefficients).

No.	Item	Item-scale correlats		Distribution of responses (%)				Correlations with related contructs		
		original	final							Social Support
		55 item version	25 item version	A	B	C	Missing (n)	Commitment (n=44)	Instrumentality (n=67)	friends (n=58)
# 1	SS explains workplace rules	.48***	.24***	51	16	33	19	.05	.16	.06
# 2	SS protects on discilpinary	.58***	.38***	50	20	30	21	.07	.16	.08
# 3	TU helps further education	.32***	.24***	20	15	65	20	.05	.15	.18
# 4	TU evening education classes	.15*	.06	6	12	82	19	.02	.22	.19*
# 5	SS clearly explains rights	.58***	.43***	51	14	35	20	.11	.08	.05
# 6	SS reduces bad management	.51***	.41***	36	26	38	24	.19	.16	.08
# 7	TU provides IR training	.37***	.22***	19	17	64	26	.11	.22*	.14
# 8	SS doesn't solve problems	.12	-.13	40	22	17	31	.15	.00	.03
9	SS helps at work	.60***	.44***	45	29	26	23	.13	.32***	.60***
10	TU officials at meetings	.47***	.50***	56	24	20	15	.21*	.35***	.09
11	Solidarity with other workers	.50***	.48***	68	17	16	22	.47***	.24*	.10
#12	Attendance of TU meetings	.27***	.27***	61	15	24	18	.21	.18*	.14
13	Protection of unfair practices	.71***	.74***	64	20	16	17	.38***	.27**	.03
#14	SS explains disciplinary rules	.62***	.47***	49	15	35	26	.09	.21*	.11
#15	TU exlpains politicals of SA	.42***	.36***	35	17	48	[illegible]	.07	.11	.04
16	TU informs financial/legal aid	.52***	.55***	70	12	18	[illegible]	.25*	.27*	.09

Table 2 (Cont)

Results showing items of TUSS with number of replies, correlations with original and final TUSS, distribution of replies, and correlations of related constructs (correlations expressed as correlation coefficients).

No.	Item	Item-scale correlates		Distribution of responses (%)				Correlations with related contructs		
		original	final							Social Support
		55 item version	25 item version	A	B	C	Missing (n)	Commitment (n=44)	Instrumentality (n=67)	friends (n=58)
#17	TU organises family functions	.27***	.15*	9	8	84	21	.00	.12	.09
18	TU support at dismissal	.49***	.60***	57	24	19	9	.35**	.26*	.13
19	TU effective solve problems	.67***	.73***	58	23	19	10	.39***	.35***	.06
20	TU takes up issues on my behalf	.68***	.72***	62	25	13	13	.31**	.23*	.13
21	TU help unfair labour practices	.52***	.58***	55	28	17	10	.13	.39***	.05
#22	TU not strong enough	.08	.01	46	21	33	22	.04	.31**	.13
23	TU improves work conditions	.58***	.66***	48	29	23	18	.45***	.30**	.25
24	TU help educational aid	.44***	.50***	51	16	33	13	.39***	.47***	.03
25	TU helps find job for unemployed	.38***	.40***	29	42	29	14	.32**	.38***	.02
#26	TU offers child care facilities	.38***	.21**	13	17	69	23	.22*	.16	.15
#27	TU gives financial support	.45***	.45***	26	32	42	20	.18	.16	.01
#28	Happy with wage increases from TU	.53***	.45***	28	16	56	13	.14	.15	.15
#29	TU does not offer burial fund	.01	.01	47	11	42	13	.04	.05	.12
#30	TU offer financial aid	.40***	.43***	80	11	9	13	.18	.41***	.11
#31	TU solve community problems	.41***	.38***	17	32	52	24	.20	.24*	.07
32	TU protects against victimisation	.58***	.62***	50	24	26	11	.40***	.37***	.23*

Table 2 (Cont)

Results showing items of TUSS with number of replies, correlations with original and final TUSS, distribution of replies, and correlations of related constructs (correlations expressed as correlation coefficients).

No.	Item	Item-scale correlates		Distribution of responses (%)				Correlations with related contructs		
		original	final							Social Support
		55 item version	25 item version	A	B	C	Missing (n)	Commitment (n=44)	Instrumentality (n=67)	friends (n=58)
#33	I make use of financial aid	.22**	.27***	32	26	42	24	.23*	.15	.11
34	TU gives strike aid	.35***	.43***	30	32	37	15	.22*	.27*	.07
35	TU helps with personal/family problems	.46***	.53***	47	31	22	16	.11	.44***	.09
#36	SS takes up issues with management	.71***	.56***	43	27	30	31	.01	.23*	.13
37	Have confidence and trust in TU	.62***	.72***	65	20	16	15	.56***	.4[illegible]**	.05
#38	SS easy to talk to	.55***	.41***	55	27	18	30	.03	.28**	.07
39	TU officials help solve problems	.63***	.70***	61	23	16	18	.25*	.36***	.15
40	SS always there to give support	.64***	.48***	50	28	22	26	.14	.27**	.15
41	Free to discuss anything with SS	.56***	.40***	59	17	24	25	.06	.27**	.06
#42	SS helps when I am angry/irritable	.60***	.41***	41	27	32	31	.03	.06	.18
43	TU members help me with my problems	.40***	.47***	24	29	47	28	.34**	.36**	.03
44	TU helps with personal needs	.47***	.47***	22	32	46	22	.12	.25**	.02
#45	I have gained nothing from TU	.15*	.14*	58	18	24	25	.03	.43***	.09
46	TU has good record	.67***	.73***	61	19	20	21	.51***	.41***	.02
47	I have made new friends at TU	.57***	.60***	59	17	24	23	.54***	.29**	.00
#48	TU helps me with my political needs	.51***	.36***	17	26	57	28	.23*	.24*	.04

Table 2 (Cont)

Results showing items of TUSS with number of replies, correlations with original and final TUSS, distribution of replies, and correlations of related constructs (correlations expressed as correlation coefficients)..

No.	Item	Item-scale correlates		Distribution of responses (%)				Correlations with related contructs		
		origiral	final							Social Support
		55 item version	25 item version	A	B	C	Missing (n)	Commitment (n=67)	Instrumentality (n=67)	friends (n=58)
#49	I can talk freely with SS	.35***	.17***	44	20	36	30	.09	.12	.01
#50	TU gives support at political unrest	.35***	.23***	15	34	52	31	.26*	.22*	.14
51	TU officials effective in helping me	.52***	.60***	56	24	19	21	.35**	.31**	.21*
#52	SS stands up for me	.68***	.48***	41	27	31	30	.15	.33***	.07
#53	SS offers moral support	.61***	.45***	41	27	31	31	.01	.25***	.04
#54	SS always listens to my problems	.63***	.41***	52	26	23	25	.06	.20	.11
55	Fellow members give me support	.54***	.60***	44	31	25	29	.29*	.30**	.20*

Note:

\# = Item deleted after Item Analysis

SS = Shop steward

TU = Trade Union

A = 'yes'

B = 'sometimes/maybe'

C = 'no'

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Reliability

Cronbach's alpha and split-half reliability were calculated. The 25-item scale had an alpha coefficient of r= 0.91. The 25-item scale has a reported split-half of 0.88. Test re-test reliability was calculated using the identical TUSS scale. It was re-adimistered 7 weeks after the initial test and had a r=0.44 (n=20, p < 0.05). The test re-test sample consisted of 20 randomly selected subjects, of which 55% were from the Port Elizabeth division and 45% were from the Johannesburg division of the trade union. The sample varied in terms of sex, race, wage, length of trade union membership, and education level. Thirty two per cent of the subjects were males and 68% were females, and 20% were blacks and 80% were coloureds. The mean wage was R108.84 per week (SD=77.52, Range=R52.00-R380.00 per week). The mean length of trade union membership was 4.47 years (SD=2.89, Range=1-14 years), and 15% of the subjects had only completed some primary school education, while 85% had completed some senior school education. Reliability was also computed for the correlating scales as it had been hypothesised that due to similarities these scales should correlate (See Table 3).

Table 3
Mean, Standard Deviation, and Alpha Coefficients for TUSS and Correlating Scales

Scale	M	SD	Reliability r
TUSS	43.65	11.37	.91
PSS-friends	46.34	6.17	.74
TU Commitment	45.31	7.00	.74
TU Instumentality	10.36	3.78	.88

Validity

Two types of validity were established; concurrent and construct validity. Concurrent validity was established by correlating the TUSS scale with three other measures which are conceptually related to trade union social support.

Correlation coefficients of TUSS with the Trade Union Instrumentality scale was 0.61 (n=67, p < 0.001), with the Trade Union Commitment scale it was 0.52 (n=44, p < 0.001), and with Social Support from friends it was 0.25 (n=58, p < 0.05). The above results show that the related scales all correlate significantly and in the predicted direction with the developed scale.

Biographical details of the subjects include that 45% were males and 55% were females. The mean male age was 36 years (SD=12.23, Range=19-76 years), and the mean female age was 34 years (SD =10.30, Range=19-58years). Fifty seven per cent of the male subjects were black, 40% coloured, and 2% Indian. Sixteen per cent of the female subjects were black, 81% coloured, and 3% Indian. Th emean length of trade union membership was 5 years (SD=5.3, Range=1-31 years). Sixteen per cent of male subjects belonged to the Cape Town division , 7% to Kimberly, 57% to Johannesburg, and 20% to the Port Elizabeth division of the trade union. One per cent of female subjects belonged to the Cape Town division, 2% to Kimberly, 47% to Johannesburg and 52% to the Port Elizabeth division of the trade union. Twenty eight per cent of the subjects had some primary school education and 72% had completed some senior school education and 72% had completed some senior school education. Of those subjects who had a primary school education, 46% were black,52% coloured, and 1% Indian. Thirty two per cent of the senior school subjects were black, 65% coloured, and 3% Indian.

Construct validity was established by using known group differences an and a factor analysis. Known group differences was reported by using t-testsand one-wayANOVA's. T-tests were carried out with the TUSS scale to determine differences between sexes and educational differences as it has been hypothesised that differences would be found. Results showed that males have lower scores (M=40.12) than females (M=46.22, t(181)=3.71, p <0.05). T-tests results on education show that subjects who had some primary school education had slightly

lower scores ($\underline{M}$=40.42 than those subjects who had completed some senior school education ($\underline{M}$=44.73,$\underline{t}$ (176)=2.20, $\underline{p}$ < 0.05).

A one-way ANOVA was performed with the TUSS scale and three biographical indices, namely trade union division ($\underline{F}$(3)=1.20; $\underline{p}$ > 0.01), job title ($\underline{F}$(3)=1.13; $\underline{p}$ was was not significant at the 0.1 level), and race ($\underline{F}$,(2)=12.03; $\underline{p}$ < 0.001). A Scheffe test was used with the F values when the one-way ANOVA's were found to be significant (that is, with biographical variables, race). A Scheffe test is used to establish all the differences between means yielded from the ANOVA, and its purpose is an explanatory and interpretive one (Kerlinger, 1974). The scheffe test can also test the combined mean of two or more groups against the mean of one other group (Kerlinger, 1973). Results from Scheffe's test for race reflected that blacks ($\underline{M}$=46.64) as a group are significantly different from coloureds ($\underline{M}$=38.54 and Indians ($\underline{M}$=36.56, $\underline{p}$ < 0.10). A factor analysis was performed on the final 25-item TUSS scale to establish construct validity. Results show that one factor emerged and contributed to 62% of the variance in the TUSS scale and has an eigenvalue of 13.62. Other factors do not contribute to much of the variance, as the second factor contributed to 15% of the variance, and the third factor to 8% of the variance. All other factors variance in the TUSS scale, and this illustrates contributed to less than 6% of the variance and their eigenvalues were less than 1.0. That only one factor contributed a significant portion of the variance illustrates that the TUSS scale is a homogeneous scale which measures a single trait (Anastasi, 1982).

DISCUSSION

Results obtained in the present study suggest that the final 25-item scale has highly satisfactory reliability and validity scores for the sample, thus it is a psychometrically acceptable measure of trade union social support.

That the test-retest showed significant results is encouraging. The test-retest result is low (r=0.44) showing that mood states play an influential role in the responses of trade union related scales (McLean, 1979). Shostak (1980) has also suggested that mood states play a greater role in responses to scales among blue collar workers than clerks or managers who are often more consistent in their responses. McLean (1979) has suggested that a stressed worker may perceive the trade union not to be offering social support on one day, but perceptions may be positive a week later. A larger test re-test sample should have been used.

The related variables were found to correlate significantly with the trade union social support variable and this result is encouraging. The Trade Union Instrumentality scale and the Trade Union Commitment scale (Fullagar, 1984, 1986) correlated the most significantly with the Trade union social support scale. This could be expected (Fullagar, 1984) because a union member who perceives his/her union to be congruent to their beliefs, attitudes and values, and who is committed to the union will also perceive the union to be offering social support (Gordon et al., 1980; Kochan, 1980).

The differences found between groups' biographical data supported the hypotheses, that being, that blacks were found to be significantly different from coloureds and Indians. This difference could be explained that because blacks have been excluded from the industrial relations and the political arena, they have sought the trade union for support to a greater extent than have coloureds or Indians (Webster, 1983). On the other hand, coloureds and Indians have been allowed to

belong and participate in trade unions along with whites, and they have some political involvement in the tri-cameral parliament. This may indicate that their need for social support has not been as crucial as it has for blacks. Second, blacks generally have a lower standard of living because of the lower wages than those earned by Indians and coloureds (Sitas, 1983). Blacks may perceive the trade union as being able to increase their wages, thus increasing their standard of living (Sitas, 1983). This may also explain why blacks view the trade union differently.

The TUSS scale appears to compare favourably with other scales measuring social support. For example, Procidano and Heller (1983) report a Cronbach's alpha of 0.88 for the Social Support from friends scale and 0.90 for the Social Support from family scale, where the Trade Union Social Support scale has a Cronbach's alpha of 0.91. That the TUSS scale has been build on previous scales and methodologies of social support can be seen as preferable, for example, using House (1981) four categories of social support.

Construct validity was obtained with the use of a factor analysis where the TUSS scale only exhibited one trait or factor being measured. Thus, the hypothesis that the trade union social support scale would yield four different factors was not supported. This means that the developed scale does not differentiate between House's (1981) typology of social support. As only one factor emerged from the factor analysis, this can be interpreted as a sign that the TUSS scale is a homogeneous measure of trade union social support (Kerlinger, 1973).

The present study therefore attempts to measure social support offered by the trade union (House, 1981), possibly for the first time. It would appear that no-one has yet attempted to evaluate the trade union as a source of social support (Norbeck et al., 1981). A theoretical implication of the present study is that

further research needs to be undertaken as to whether trade union social support is more, or less, effective than traditional forms of social support.

A limitation of the present study is that the data was obtained from only one source i.e., data obtained from only one trade union (Anastasi, 1982). Therefore, the study could not be seen as being representative of all trade union members in South Africa. Rather, this study can be seen as being representative of trade union members working within the motor industry.

The TUSS scale is subject to reporting biases found inherent in any paper-and-pencil inventory. Associated with this problem was the low literacy rate of the blue-collar workers who completed the questionnaires. Some prompting had to be used, and the negatively worded questions posed a problem. Thus, where possible convergent behaviour data should be obtained. Although this bias was found, the TUSS scale can be seen as a step in clarifying the nature of social support; an area which has been plagued with many different conceptualisations (House, 1981).

On the basis of the above rationale, the findings of the present study are encouraging. That reliability and validity results were significant, and that validity is now established, the TUSS scale could be used in further studies. At this stage the established reliability and validity of the TUSS scale is satisfactory and the TUSS scale can be used in evaluating social support offered by the trade union in the stress-strain relationship.

CHAPTER 5

STUDY 2 TRADE UNION SOCIAL SUPPORT AS A MODERATOR OF THE STRESS-STRAIN RELATIONSHIP

In Study 2 social support offered by trade unions will be tested as to whether it does buffer and/or moderate the industrial relations stress-strain relationship. For this purpose a model will be developed where industrial relations stressors (i.e., the independent variables) will include negative IR-events, role ambiguity and role conflict (Cooper & Marshall, 1976). Social support offered by the trade union (House, 1981), and hardiness (Kobasa, 1982) will be treated as moderator variables. Strains associated with stress (i.e., the dependent variables) will include psychological well-being (Goldberg, 1972), life satisfaction (Warr, Cook & Wall, 1979) and job satisfaction (Warr et al., 1979) and propensity to leave (Lyons, 1971) (see Figure 4).

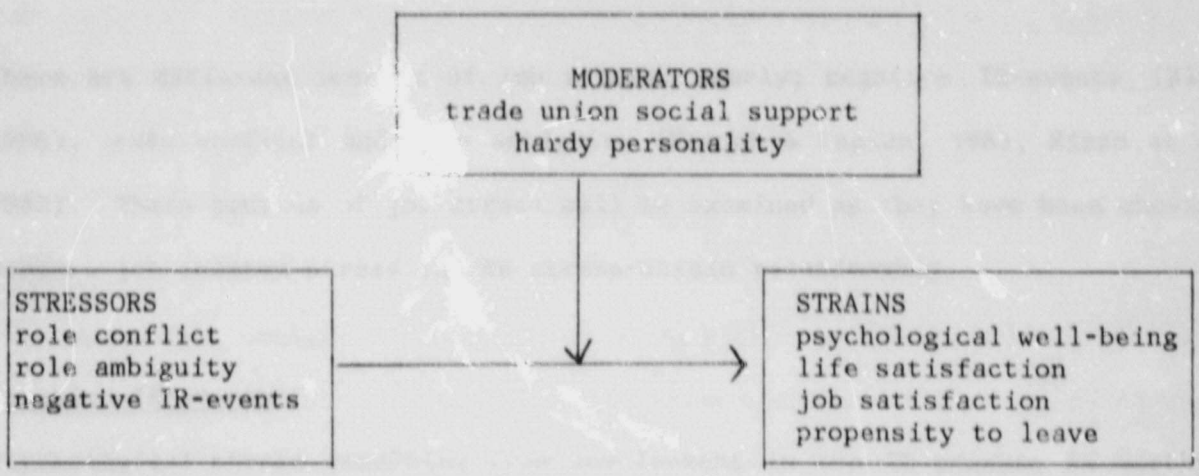

Figure 4
A model of the Industrial Relations stress process