```
options ls=100 nodate nonumber;

data work.snacks;
input Snack $
  Messy
  Fresh
  Healthy
  Price
  Quality
  Allergy
  Tasty
  EasyFind
  Package
  Prefer
;
datalines;
FSTG      4  4  5  3  5  5  5  2  5  5
CheezIt   4  4  2  4  5  4  5  6  3  5
Animal    1  3  2  5  3  2  3  5  3  3
Ritz      2  4  2  4  4  3  4  6  3  3
Saltine   2  2  2  4  3  3  3  5  2  3
Goldfish  4  4  2  5  4  3  4  6  4  4
ChexMix   3  3  3  3  3  3  4  4  3  3
WheatThn  2  4  4  3  5  3  4  6  4  4
Oreo      2  4  2  3  4  3  5  6  5  5
;
run;

proc factor data=work.snacks
  method = principal
  rotate = varimax
  norm = kaiser
  out = work.results   /* saves brand factors      */
  nfactors = 3         /* required when using out= */
;
run;

proc print data=work.results;
run;
```

The SAS System

The FACTOR Procedure

Input Data Type	Raw Data
Number of Records Read	9
Number of Records Used	9
N for Significance Tests	9

The SAS System

The FACTOR Procedure
Initial Factor Method: Principal Components

Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 10 Average = 1

	Eigenvalue	Difference	Proportion	Cumulative
1	5.51050324	3.63283573	0.5511	0.5511
2	1.87766751	0.80334831	0.1878	0.7388
3	1.07431920	0.49343540	0.1074	0.8462
4	0.58088380	0.08492009	0.0581	0.9043
5	0.49596371	0.22633999	0.0496	0.9539
6	0.26962371	0.11705999	0.0270	0.9809
7	0.15256372	0.11408863	0.0153	0.9962
8	0.03847510	0.03847510	0.0038	1.0000
9	0.00000000	0.00000000	0.0000	1.0000
10	0.00000000		0.0000	1.0000

3 factors will be retained by the NFACTOR criterion.

Factor Pattern

	Factor1	Factor2	Factor3
Messy	0.67089	0.00160	0.67221
Fresh	0.73487	0.54255	-0.14529
Healthy	0.65486	-0.61160	-0.21875
Price	-0.56503	0.40146	0.51326
Quality	0.85303	0.26913	-0.00252
Allergy	0.85295	-0.28773	0.35422
Tasty	0.90902	0.23211	0.00137
EasyFind	-0.35419	0.86335	-0.14455
Package	0.77920	0.11910	-0.37741
Prefer	0.87074	0.28185	0.03525

Variance Explained by Each Factor

Factor1	Factor2	Factor3
5.5105032	1.8776675	1.0743192

The SAS System

The FACTOR Procedure
Initial Factor Method: Principal Components

Final Communality Estimates: Total = 8.462490

Messy	Fresh	Healthy	Price	Quality
0.90197030	0.85549878	0.85074920	0.74385998	0.80009321

Allergy	Tasty	EasyFind	Package	Prefer
0.93577824	0.88018429	0.89171333	0.76378159	0.83886104

The SAS System

The FACTOR Procedure
Rotation Method: Varimax

Orthogonal Transformation Matrix

	1	2	3
1	0.77754	-0.44109	0.44818
2	0.55784	0.81280	-0.16785
3	-0.29025	0.38053	0.87804

Rotated Factor Pattern

	Factor1	Factor2	Factor3
Messy	0.32743	-0.03883	0.89065
Fresh	0.91622	0.06156	0.11072
Healthy	0.23150	-0.86920	0.20408
Price	-0.36436	0.77084	0.13004
Quality	0.81413	-0.15848	0.33493
Allergy	0.39988	-0.47530	0.74159
Tasty	0.83588	-0.21178	0.36965
EasyFind	0.24817	0.80295	-0.43058
Package	0.78184	-0.39051	-0.00215
Prefer	0.82403	-0.14158	0.37389

Variance Explained by Each Factor

Factor1	Factor2	Factor3
4.0062979	2.4681506	1.9880415

Final Communality Estimates: Total = 8.462490

Messy	Fresh	Healthy	Price	Quality
0.90197030	0.85549878	0.85074920	0.74385998	0.80009321

Allergy	Tasty	EasyFind	Package	Prefer
0.93577824	0.88018429	0.89171333	0.76378159	0.83886104

The SAS System

The FACTOR Procedure
Rotation Method: Varimax

Scoring Coefficients Estimated by Regression

Squared Multiple Correlations of the Variables with Each Factor

Factor1	Factor2	Factor3
1.0000000	1.0000000	1.0000000

Standardized Scoring Coefficients

	Factor1	Factor2	Factor3
Messy	-0.8204235	0.41068945	1.04854167
Fresh	-0.2770341	0.15598805	0.01703054
Healthy	2.51417286	-1.1767285	-1.6125475
Price	1.37524339	0.00391196	-0.4686691
Quality	-1.8133496	0.78348796	1.44470895
Allergy	1.09067775	-0.4775993	-0.4001663
Tasty	2.29334375	-0.4577962	-0.9710569
EasyFind	2.27553007	-0.273088	-1.4541246
Package	0	0	0
Prefer	0	0	0

The SAS System

Obs	Snack	Messy	Fresh	Healthy	Price	Quality	Alltasty	Easy Fingder	Package	Prefer	Factor1	Factor2	Factor3
1	FSTG	4	4	5	3	5	5	5	2	5	5	0.46687	-1.88623	1.35940
2	CheezIt	4	4	2	4	5	4	5	6	3	5	0.73413	1.04837	1.34053
3	Animal	1	3	2	5	3	2	3	5	3	3	-0.99801	0.44461	-0.88460
4	Ritz	2	4	2	4	4	3	4	6	3	3	0.05315	0.56774	-0.48098
5	Saltine	2	2	2	4	3	3	3	5	2	3	-1.69196	0.01941	0.11200
6	Goldfish	4	4	2	5	4	3	4	6	4	4	0.23582	1.30710	0.83230
7	ChexMix	3	3	3	3	3	3	4	4	3	3	-0.94300	-0.84117	0.01710
8	WheatThn	2	4	4	3	5	3	4	6	4	4	0.80647	-0.63725	-1.13499
9	Oreo	2	4	2	3	4	3	5	6	5	5	1.33651	-0.02257	-1.16076