

# **Leadership Style and Managerial Type as Related to Working Climate, Gender and Personality in Terms of the Spiral Aftereffect Technique (SAT)**

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The study considers relations in a group of 95 managers, 41 women and 54 men, between working climate of their units, their leadership styles in terms of their subordinates' ratings of employee-centeredness, change-centeredness and production-centeredness, and their personality patterns according to the Spiral Aftereffect Technique (SAT). Eight managerial types were distinguished, based on low and high ratings on the three leadership style dimensions. Women were rated as being high on change-centeredness more often than men. The working climate of the unit of a "vague manager" or of a "bureaucrat" was rated as being low, that of a "gardener", of a "buddy manager" and to some extent of an "all-round manager" as being high. Managers classified as M- on the SAT were frequently low or very low on employee-centeredness and change-centeredness, those classified as Mo frequently high or very high on these dimensions. Mo was typical for an "all-round manager" and for a manager at a unit with high ratings of working climate. Low ratings of working climate were often found for managers classified as LLs or H+. Interpretations of SAT personality patterns were based on the Andersson model of the mind.

Key words: Gender, leadership style, managerial type, personality, SAT, working climate

In an investigation of the leadership style of managers in a Swedish chemical company, Ekvall, Arvonen and Nyström (1987) identified, alongside the two well-known dimensions of employee-centeredness and production-centeredness, a third dimension they referred to as change-centeredness. A factor analysis of results for 346 Swedish, 229 Finnish and 123 American managers by Ekvall and Arvonen (1991) confirmed the usefulness of such a three-dimensional description of leadership style (cf. Ekvall & Arvonen, 1994). Indeed, present-day managers appear to often attempt, not only to live up to long-established standards of leadership, but also to promote the growth of their company, to maintain a creative attitude, to develop visionary qualities and to be ready to accept risks, characteristics that can be seen as belonging to a change-centered leadership style.

Bass, Avolio and Atwater (1996) suggested recently that, despite gender differences usually not being shown in research on task- versus relations-oriented leadership style, women leaders tend to practice what they term transformational leadership to a greater extent than male leaders. Leadership of this type would appear to have much in common with change-centered leadership, since the authors describe it as influencing followers "by getting them to transcend their self-interests for the good of the group, organisation, or society, while also enhancing /their/ expectations and abilities, and their willingness to take risks" (Bass et al., 1996, p. 10). Accordingly, we considered it to be of particular interest to investigate whether women managers would show stronger signs of change-centeredness than male managers.

Since Ekvall and Arvonen (1991) suggested that managers who their subordinates rate as being high on the dimensions of employee-centeredness, change-centeredness and production-centeredness are those who tend to be the most successful as leaders (cf. Arvonen & Ekvall, 1999), we decided to assess the managerial type to which a manager belonged in terms of all three dimensions. Defining high ratings and low on a particular dimension in terms of a median cut based on the subjects as a group resulted in eight managerial types. A question of interest was whether the women managers would tend more frequently than the male managers to rate high on all three dimensions, a managerial type we refer to as that of an "all-round manager".

A basic question that Ekvall and Arvonen (1991) posed, not investigated thus far, is how the leadership style of managers in terms of these three dimensions is related to their personality, a matter which could be important in connection with the recruitment and training of managers (cf. Hogan, Curphy & Hogan, 1994). It also appears, as Nystedt (1997, p. 12) noted in his recent review of the field, that "researchers increasingly recognize that personality may have a role to play in explaining leader behaviour and leader effectiveness".

The technique for personality assessment employed in the present study, that of the Spiral Aftereffect Technique (SAT), does not involve the measuring of a particular set of personality traits, although in an earlier investigation by one of us (Andersson, 1969) results on it were correlated with five self-report dimensions (extraversion, neuroticism, capacity for energetic investment and recovery, sociability and emotional control, and impulsivity and preference for change). The SAT was developed within the tradition of research and diagnostics referred to as the percept-genetic approach to perception–personality (Andersson, 1991; Andersson, Nilsson, Ruuth & Smith, 1972; Andersson & Ryhammar, 1998; Hentschel & Smith, 1980; Kragh & Smith, 1970; Rubino, 1987; Smith, 2001), one which involves studying the

individual in terms of reconstruction in the current time frame of different universal themes that all human beings share, such as the need of continually reestablishing one's "identity".

In the SAT, the person is to attend to the duration of a movement aftereffect experienced in a series of ten repeated trials. The aim is to examine how the person reconstructs or recreates his/her "identity" in the form of a preferred relation between personal (subjective) and impersonal (objective) reality, as represented by the average aftereffect duration of the two last trials in the series. Four such levels are distinguished, referred to as LL (very low), L (low), M (intermediate) and H (high level of final aftereffect duration). The additional classification of LLs is employed for designating the aftereffect duration's being very short on each of the ten trials. Of interest in connection with these various designations is also what "strategy" the person utilizes over time, that of a successive decrease in aftereffect duration (– or "minus trend"), a successive increase (+ or "plus trend"), or a lack of any clear indication of either a minus or a plus trend (o or "zero trend") before the final level is reached.

The SAT identity and SAT strategy a person shows are combined to obtain nine personality patterns, LLs, LL, L–, L+, H–, H+, M–, M+ and Mo, arranged in developmental order according to the Andersson (1991) model of the mind (for a brief presentation of this model, see Andersson & Ryhammar, 1998). Since aftereffect duration in the SAT is determined by using impersonal (objective) reality as a point of reference, one can describe each of the individual SAT patterns as representing the relation over the repeated trials between the degree of investment in "self" versus "nonself" factors. Of the nine personality patterns, H+ and LLs are the most "extreme" in the sense that the former (a successive increase in aftereffect duration, ending in a high final level) represents the strongest investment in self factors whereas the latter (a very short aftereffect duration on all trials) represents the least investment in such factors. The most "balanced" pattern with respect to investment in both self and nonself factors is Mo (an intermediate aftereffect duration maintained over the trials as a whole).

Although the SAT patterns can be arranged in developmental order, there is no simple relationship between that order and, for example, the degree of psychopathology in a psychiatric sense. Knowing the SAT pattern of a given person does indicate, however, how that person tends to deal with anxiety, aggressivity or, for that matter, a depressive mood. This has been particularly useful not only in clinical studies (e.g., Andersson, 1991, chap. 9; Andersson, Almgren, Englesson, Smith, Smith & Uddenberg, 1984; Hallborg & Andersson, 2002; Montgomery, 2002; Petersson, Andersson & Nilsson, 1997), but also in non-clinical

ones (e.g., Amnér, 1997; Andersson & Bengtsson, 1985; Andersson & Ryhammar, 1998; Claesson & Olsson, 1995; Ryhammar, 1996). Of particular importance is the fact that, according to the Andersson model, affect regulation is expressed by means of the SAT strategies (minus, plus and zero trend).

In our attempts, however, to predict what relations might be found between personality patterns shown by the SAT and managerial types, we considered ideas that in the Andersson model are more closely linked with the concept of SAT identity than of SAT strategy. Variations in SAT identity are regarded in terms of the model as being reconstructions at a later point in life of those basic relational patterns between the child and the parental figures that are typical for the oedipal period. Since the characteristics of such relational patterns are considered to never be wholly abandoned, they can also be thought to reappear in situations of dominance and subordination such as those of leadership.

The simplest way of describing these relational patterns is in terms of relative investment in self versus nonself factors. According to the Andersson model, there is a change during oedipal development from a predominance of nonself investment (reconstructed as LLs, LL or L in the SAT) to a predominance of self investment (H), followed then by a balanced investment in both self and nonself factors (M). This last step is characterized – in accordance with Heinz Kohut's (1971, 1977, 1984) model of self and selfobject – by an optimal individuation of the self, one that involves the regulation of self-esteem from within, a lesser degree of overvaluation or "idealization" of other persons or of oneself, a recognition of mutuality in relationships, and the acceptance of both one's own and of other persons' capacities and talents (Andersson, 1991, pp. 44-45). We considered these to be essential attributes of a successful leader and to suggest that all-round managers are characterized more frequently than managers of other types by showing some one of the M patterns (M-, M+ or Mo) in the SAT.

According to Ekvall (1996; cf. Ekvall, 1985, 1987; Ekvall, Nyström & Waldenström-Lindblad, 1985; Ekvall & Ryhammar, 1998, 1999; Andersson & Ryhammar, 1999; Ryhammar & Andersson, 2001), the climate at a place of work can readily be described in terms of ten qualities which can be combined into a single composite measure of climate. We assumed that the leadership style of a manager has at least some effect on the working climate of his/her unit. In a study by Ekvall, Frankenhaeuser and Parr (1995) in which public dental service employees estimated both the working climate at their clinics and their managers' leadership styles, the strongest and most frequently significant correlations were those between both an employee-centered and a change-centered leadership style and attributes

relating to climate. In the present study, we expected similar results in connection with the composite climate dimension we employ, its also being our aim to explore how managerial types are related to this dimension.

High scores on the two dimensions of leadership style just referred to are part of the managerial type we term that of an all-round manager. In line with our prediction of how personality and managerial type are related, we thus expected that high employee ratings of working climate would more frequently be found in the units of managers classified as M–, M+ or Mo on the SAT than in those of managers showing any of the other SAT patterns.

## *METHOD*

### *Subjects*

The subjects, 41 women and 54 men, were managers in 31 different companies located in the Stockholm or Gothenburg regions in Sweden. They had been assigned by their superiors to a program of individual leadership training conducted by certified psychologists. The SAT was administered to each manager as part of the initial activities of the program. The managers were informed later of how their subordinates perceived their leadership style and the working climate of their unit.

The age of the subjects varied from 29 to 58 years for the women, with a median age of 45 years, and from 31 to 61 years for the men, with a median age of 47 years. In both gender groups, 70 % of the subjects had an academic background. Table 1 shows how the men and the women were distributed with respect to the four types of companies and the three management levels represented. Most of the subjects were in the employ of industrial or public services companies. As can be seen, there were clearly more men than women among the middle managers of the industrial companies involved.

Table 1.  
*Distribution of subjects with respect to gender, management level and type of company.*

Type of company	First-line manager		Middle manager		Top manager		All
	Female	Male	Female	Male	Female	Male	
Industrial	2	2	8	20	1	2	35
IT/Software	1	1	0	5	2	1	10
Newspaper	0	0	2	3	0	0	5
Public services	8	7	17	12	0	1	45
Total	11	10	27	40	3	4	95

To be included in the study, a subject had to have been employed as manager for at least a year. Most of the subjects had had their position a much longer period of time, at the most 26 years for the women and 28 years for the men; the median period of having been employed as a manager was 6 years for the women, 9 years for the men and 8 years in the group as a whole.

Questionnaires concerning leadership style and working climate were distributed to the subordinates of each manager in conjunction with the initial portion of the training program in which the managers participated. The number of subordinates varied between 4 and 16 for the male managers (median = 6; total number of subordinates = 390), and between 2 and 20 for the women managers (median = 8; total number of subordinates = 349). Since each of the two women managers with the smallest number of subordinates – one of them having two and the other three subordinates – were given very similar ratings by their subordinates on the three variables of leadership style, we decided to include both of them in the analysis.

#### *Spiral Aftereffect Technique*

In the SAT there are two pretrials, separated by at least fifteen minutes in time from the ten main trials used for the classification of subjects in terms of the nine personality patterns referred to. On each trial, the subject first gazed for forty-five seconds at the center of an arithmetic spiral rotating toward its center at a speed of a hundred revolutions per minute. Immediately after having watched this rotating spiral, the subject was shown a stationary circle onto which he/she projected the motion aftereffect of an illusory expansion or approach of the circle. The subject's task was to note when the aftereffect had ended and report this by saying "stop". Immediately thereafter, a new trial began. Among adult subjects, the aftereffect duration usually varies between one and thirty seconds. The apparatus employed is portable and is constructed on half the scale of the one described in Andersson, Nilsson and Henriksson (1970).

Classification of the different SAT patterns was based, as already described, on the type of SAT strategy displayed (a minus, plus or zero trend, established by estimating the linear trend of the ten main trials; for the original account of these calculations, see Andersson, 1962) and the type of SAT identity shown (the arithmetic mean of the aftereffect durations of trials nine and ten). The norms used for the classification of SAT identities (LLs, LL, L, M and H) and of a zero trend are taken from Andersson (1969) and Andersson and Weikert (1974). The norms for female and male subjects are identical and can be applied to subjects from the age of seven years and upwards (Andersson, 1995).

How the managers were distributed with respect to SAT patterns can be seen in Table 2. Comparison of the two gender groups for each of the SAT patterns revealed one statistically significant difference, the LL pattern being more frequent among the women (the contrasts of 15/8 and 26/46 give  $p = 0.02$ ; Fisher Exact Probability Test, two-tailed, used here and for all the other fourfold tables). The same SAT pattern was also found to be more common among the present managers than among those university teachers (41 women, 91 men) that Ryhammar (1996) tested (Table 2; the contrasts of 23/18 and 72/114 give  $p = 0.05$ ).

Table 2.

*Distribution of subjects in the present study (managers) and a group of university teachers (from Ryhammar, 1996) in terms of personality patterns on the SAT.*

Group	LLs	LL	L-	L+	H-	H+	M-	M+	Mo
Women	2	15	9	0	1	4	6	1	3
Men	9	8	13	1	3	2	9	3	6
Managers (total)	11	23	22	1	4	6	15	4	9
University teachers	7	18	32	8	12	19	20	4	12

### *Leadership style and managerial type*

The Ekvall and Arvonen (1991) questionnaire, given to the subordinates of each manager, was used for assessing leadership style in terms of employee-centeredness, change-centeredness and production-centeredness. It includes 30 items, 10 for each of the three dimensions.

Employee-centeredness was assessed by means of the following items: My manager – shows regard for his/her subordinates as individuals; is considerate; is just in treating his/her subordinates; creates an atmosphere free of conflict; creates trust in other people; is flexible and ready to rethink his/her point of view; is friendly; relies on his/her subordinates; stands up for his/her subordinates; has an open and honest style; allows his/her subordinates to decide.

Change-centeredness was determined by answers in response to the following items: My manager – pushes for growth; offers ideas about new and different ways of doing things; initiates new projects; experiments with new ways of doing things; makes quick decisions when necessary; encourages thinking along new lines; likes to discuss new ideas; is willing to take risks when making decisions; sees possibilities rather than problems; expresses thoughts and plans about the future.

Production-centeredness was assessed on the basis of the following items: My manager – plans carefully; gives clear instructions; is very exacting about plans being followed; defines and explains work requirements for subordinates clearly; creates order; makes a point of following rules and principles; checks on things carefully in supervising work; analyzes and thinks things through before deciding; sets clear goals; makes very clear who is responsible for what; is consistent.

Answers were marked on a four-point scale (seldom or never/sometimes/often/most of the time). Mean scores, calculated for each manager for each of the three leadership style dimensions on the basis of the ratings his/her subordinates provided, were used as variables. To which of the eight managerial types a manager belonged was determined according to whether a low (–) or a high (+) score, as based on a median split on the scores for the total group of managers, had been obtained on employee-centeredness, change-centeredness and production-centeredness, taken below in that order. These types were those of the "vague manager" (—), the "all-round manager" (+++), the "bureaucrat" (—+), the "idea-maker" (–+–), the "entrepreneur" (–++), the "administrator" (+–+), the "gardener" (++–) and the "buddy manager" (+—). Close to half of the subjects (49 %) were classified as being either a vague manager (26 %) or an all-round manager (23 %), the other half of the subjects being rather evenly distributed over the other six managerial types (Table 4).

### *Working climate*

The Ekvall (1996) climate questionnaire was likewise given to the subordinates of each of the managers. The questionnaire deals with the following ten areas, to each of which five items apply as several factor analyses have shown: the emotional involvement of members in the operations and goals of the working place ("challenge"), the independence evident in the behavior of the members ("freedom"), the support for new ideas ("idea support"), the emotional safety of relationships ("trust/openness"), the dynamic character of life at the working place ("dynamism/liveliness"), the spontaneity and sense of ease displayed ("playfulness/humor"), the occurrence of discussion and debate regarding differing viewpoints, ideas and the like ("debates"), the presence of personal and emotional tensions ("conflicts"), the tolerance of uncertainty ("risk taking") and, finally, the amount of time people were able to devote to elaborating new ideas ("idea time").

The subordinates of the different managers gave their answers by markings on a four-point scale (not true at all/true to some extent/largely true/true to a very high degree). A composite

climate score was obtained for each of them, items pertaining to conflict being inverted. The mean of these composite scores was then calculated for each managerial unit, its being determined finally on the basis of a median split whether the working climate was rated high or low.

### RESULTS

The women managers were rated by their subordinates as being high on the dimension of change-centered leadership style more often than the male managers. On the other two leadership dimensions, employee-centeredness and production-centeredness, as well as on the working climate dimension, no gender differences were obtained (Table 3).

Table 3.  
*Distribution of managers with respect to gender and ratings by subordinates of leadership style and of working climate.*

Group	Women	Men	p
Employee-centeredness			
Low	21	27	
High	20	27	n.s.
Change-centeredness			
Low	14	33	
High	27	21	.01
Production-centeredness			
Low	17	30	
High	24	24	n.s.
Working climate			
Low	19	28	
High	22	26	n.s.

The distribution of subjects in terms of gender and managerial types is shown in Table 4. Clearly, all-round managers were more frequent among the women than the men, the opposite being the case for the administrators and the buddy managers, and to some extent for the vague managers as well.

As can be seen in Table 5, the three leadership style dimensions were clearly related to each other, both in the total group of subjects and in the subgroups of women and men. As expected, there was a strong positive correlation between the dimension of working climate and both employee-centeredness and change-centeredness, particularly in the case of male

managers, for whom no appreciable relationship between production-centeredness and climate was evident.

Table 4.  
*Distribution of managers with respect to gender and managerial types.*

Group	Women	Men
Vague manager	9	16
All-round manager	14	8
Bureaucrat	3	4
Idea-maker	4	2
Entrepreneur	5	5
Administrator	2	7
Gardener	4	6
Buddy manager	0	6

  

Group	Women	Men
All-round manager	14	8
Bureaucrat, idea-maker, entrepreneur or gardener	16	17
Vague manager	9	16
Administrator or buddy manager	2	13

$\chi^2 = 10.10$  (3 df),  $p = 0.02$

Table 5.  
*Pearson correlation coefficients between leadership style dimensions and working climate.*

Dimension/group	Change-centeredness	Production-centeredness	Working climate
Employee-centeredness			
Women	.53***	.40**	.49***
Men	.69***	.39**	.64***
All	.58***	.39***	.56***
Change-centeredness			
Women		.40**	.44**
Men		.28*	.62***
All		.33***	.52***
Production-centeredness			
Women			.21
Men			.02
All			.11

\*  $p \leq 0.05$ , \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$

Since the relationships between the climate variable and managerial types were very similar in the two gender groups, except for the fact that no buddy managers were found among the women, only results for the total group are given in Table 6. The ratings of working climate tended to be low for the vague managers and for the bureaucrats and to be high for the gardeners and for the buddy managers and to a lesser degree for the all-round managers.

Table 6.  
*Distribution of managerial types and the subordinates' ratings of working climate (total group).*

Group	Low rating	High rating
Vague manager	21	4
All-round manager	7	15
Bureaucrat	6	1
Idea-maker	3	3
Entrepreneur	5	5
Administrator	4	5
Gardener	1	9
Buddy manager	0	6

  

Group	Low rating	High rating
Vague manager or bureaucrat	27	5
Idea-maker, entrepreneur or administrator	12	13
All-round manager	7	15
Gardener or buddy manager	1	15

$\chi^2 = 30.32$  (3 df),  $p = 0.0000007$

The leadership style dimension of production-centeredness was not related in any obvious way to personality patterns on the SAT, but employee-centeredness and change-centeredness were. Since the findings were in the same direction for both gender groups, only results for the total group will be presented.

A clear-cut difference between managers classified as M- and Mo on the SAT was found, those with the former pattern being rated by their subordinates as being low on employee-centeredness and those with the latter pattern as being high. Subjects with other patterns were quite evenly distributed on this leadership style dimension (Table 7).

Those classified as M- were more often rated as low on change-centeredness than was the case for other managers (the contrasts of 12/3 and 35/45 give  $p = 0.01$ ). As can be seen in Table 8, employing upper and lower quartile splits (instead of a median split) so as to obtain subgroups of very low, of intermediate and of very high ratings on this leadership style dimension revealed obvious differences between the managers in terms of SAT patterns. Of the fifteen subjects classified as M-, ten (3 women and 7 men) were characterized as having very low ratings on this dimension. Of the nine subjects classified as Mo, six (3 women and 3 men) obtained very high ratings. Intermediate ratings on change-centeredness were typical of managers who displayed some one of the other SAT patterns.

Table 7.

*Personality patterns of the managers on the SAT as related to ratings by their subordinates on the leadership style dimension of employee-centeredness (total group).*

Group	Low rating	High rating
M-	12	3
Mo	1	8
Other patterns	35	36

$\chi^2 = 10.85$  (2 df),  $p = 0.004$

Table 8.

*Personality patterns of the managers on the SAT as related to ratings by their subordinates on the leadership style dimension of change-centeredness (total group).*

Group	Very low rating	Intermediate rating	Very high rating
M-	10	4	1
Mo	1	2	6
Other patterns	13	41	17

$\chi^2 = 24.37$  (4 df),  $p = 0.00007$

Those classified as Mo were more often all-round managers than being some other type of manager (Table 9). This was the only managerial type that showed a statistically significant relationship with any of the SAT patterns.

There were three women and six men classified as Mo on the SAT. Except for one of the men, the working climates of the units of all these managers were given a high rating. Mo was in fact the only separate SAT pattern found to be clearly related to the assessments of working climate (the contrasts of 8/1 and 40/46 give  $p = 0.03$ ). However, managers with the most "extreme" patterns on the SAT, those of LLs and H+, often belonged to working units with

low ratings of climate. The grouping of all the SAT patterns in relation to working climate shown in Table 10 thus appears to represent an appropriate description of our findings.

Table 9.

*Distribution of the managers in terms of personality patterns on the SAT and managerial types (total group).*

Group	LLs	LL	L-	L+	H-	H+	M-	M+	Mo
Vague manager	4	5	5	0	1	2	7	0	1
All-round manager	2	6	4	1	1	2	1	0	5
Bureaucrat	0	1	1	0	0	1	3	1	0
Idea-maker	1	1	2	0	0	0	2	0	0
Entrepreneur	1	2	4	0	1	1	0	1	0
Administrator	1	4	0	0	0	0	2	1	1
Gardener	1	3	4	0	0	0	0	1	1
Buddy manager	1	1	2	0	1	0	0	0	1

Group	Mo	Other patterns
All-round manager	5	17
Other managerial types	4	69

$p = 0.03$

Table 10.

*Personality patterns of the managers on the SAT as related to ratings by their subordinates of working climate (total group).*

Group	LLs	LL	L-	L+	H-	H+	M-	M+	Mo
Low rating	8	12	8	1	2	5	9	1	1
High rating	3	11	14	0	2	1	6	3	8

Group	LLs or H+	LL, L-, L+, H-, M- or M+	Mo
Low rating	13	33	1
High rating	4	36	8

$\chi^2 = 10.33$  (2 df),  $p = 0.006$

## DISCUSSION

Why were the women managers more frequently rated high by their subordinates on the leadership style dimension of change-centeredness than the male managers? One explanation might be that in order to be appointed a manager a woman would have to demonstrate to her superiors a greater awareness than a man of a change-centered leadership style being a basic

requirement for a present-day leader. This might reflect what would seem the greater ease of men than of women in gaining a position of leadership.

In line with earlier results (Ekvall et al., 1995), obtaining high scores on the composite dimension of working climate was found to be related to obtaining high scores on the leadership style dimensions of employee-centeredness and change-centeredness. Somewhat unexpectedly, all the buddy managers were found to be men who supervised units in which the climate ratings were high. Otherwise, the managerial types were distributed with respect to working climate in the manner that could be expected, vague managers and bureaucrats (both scoring low on employee-centeredness and on change-centeredness) obtaining low ratings, and the gardeners as well as to some extent the all-round managers (both scoring high on employee-centeredness and change-centeredness) obtaining high ratings.

The present study seems to confirm that managers' leadership style is related to their personality. Despite the women and the men differing somewhat in the distribution of their SAT personality patterns – the LL pattern, for example, being more common among the women – there were no obvious gender differences in regard to the relationships between such patterns and leadership style or managerial type. The relationships obtained were somewhat puzzling, however, in view of certain of the assumptions we made.

We were wrong in assuming that each of the M patterns would more frequently occur in connection with the managerial type of all-round manager than with any of the other SAT patterns, since it is only the Mo pattern for which this holds. Unexpectedly, managers classified as M– and Mo were found to be opposite to each other in terms of both employee-centeredness and change-centeredness, subjects of the former category mainly scoring either low or very low on these leadership style dimensions, whereas subjects of the latter category scored mostly either high or very high on them.

Bass et al. (1996) contrasted transformational with transactional leadership. As already indicated, transformational and change-centered leadership may have much in common. Managers classified as M– can hardly be regarded as transformational leaders, due to their very low scores on change-centeredness. Can they be regarded as transactional leaders, however? We suggest this as a hypothesis for further research, since emphasis on outward conditions is an essential characteristic both of persons obtaining M– on SAT and of transactional leaders. Specifically, in the case of M– the minus trend indicates an "extraverted orientation" (cf. Andersson, 1967, 1969; Andersson et al., 1970; Andersson, 1991, chap. 2)

and, in the case of transactional leader, how one acts toward subordinates is primarily determined by the immediate external situation.

As already noted, Mo is the most "balanced" personality pattern with respect to investment in both self and nonself factors. This pattern is also the most "mature" when the SAT patterns are arranged in developmental order according to the Andersson model. It is of considerable interest, therefore, that subjects obtaining this pattern more frequently turned out to be all-round managers, i.e. managers who are considerate of their employees, who initiate useful changes and who set clear goals for the work, than did subjects with other patterns. This managerial type, one of "change under control", appears to have much in common with what has been described as "management by objectives" (Thurley & Wirdenius, 1973), characterized by the manager's initiating the goals of his/her unit together with the subordinates and then allowing them to try to reach these goals within the established order.

The idea that the working climate should tend to be perceived positively by employees who work under the conditions just described seems quite in line with the finding in the present study of the subordinates of the Mo managers tending to give the climate of their unit a high rating. The personality of the manager appears to contribute not only to the development of a good but also of a bad working climate, however, since subjects classified as LLs or H+ tended to be managers of units in which their subordinates often gave the working climate a low rating. Being assigned to the LLs category appears to indicate the individual's being highly dependent upon external or nonself factors, which according to the Andersson model can be described as a primary dependency on others, together with a sort of boundlessness. H+, on the other hand, gives evidence of what can be seen as an overinvestment in self factors, persons characterized by this pattern's often endeavoring to find solutions to their inner problems outside themselves, using other people for their own purposes.

### REFERENCES

- Amnér, G. (1997). *Fear of flying in civil airline passengers. A manifold phenomenon with various motivational roots*. Lund: Department of Psychology, Lund University.
- Andersson, A. L. (1962). Adaptive patterns in a serial spiral after-effect test as related to a system of personality dimensions. *Scandinavian Journal of Psychology*, 3, 205-214.
- Andersson, A. L. (1967). Adaptive visual aftereffect processes as related to patterns of colour-word interference serials. *Perceptual and Motor Skills*, 25, 437-453.
- Andersson, A. L. (1969). Adaptive regulation of visual after-effect duration and social-emotional adjustment. *Acta Psychologica*, 29, 1-34.
- Andersson, A. L. (1991). *Perceptgenes och personlighet*. Lund: Lund University Press.

- Andersson, A. L. (1995). *Spiral Aftereffect Technique*. Lund: Institutionen för tillämpad psykologi, Lunds universitet.
- Andersson, A. L., Almgren, P.-E., Engleson, I., Smith, G. J. W., Smith, M. & Uddenberg, G. (1984). Personlighet och moderskap. Kvinnors emotionella reaktioner och sociala situation i samband med barnafödande i förhållande till deras och deras barns personlighet 7-8 år senare. *Psykologi i tillämpning, Lunds universitet*, 2, Nr 3.
- Andersson, A. L. & Bengtsson, M. (1985). Percept-genetic defenses against anxiety and a threatened sense of self as seen in terms of the Spiral Aftereffect Technique. *Scandinavian Journal of Psychology*, 26, 123-139.
- Andersson, A. L., Nilsson, A. & Henriksson, N.-G. (1970). Personality differences between accident-loaded and accident-free young car drivers. *British Journal of Psychology*, 62, 409-421.
- Andersson, A. L., Nilsson, A., Ruuth, E. & Smith, G. J. W. (Eds) (1972). *Visual aftereffects and the individual as an adaptive system. Psychological investigations with projected aftereffects and afterimages*. Lund: Gleerup.
- Andersson, A. L. & Ryhammar, L. (1998). Psychoanalytic models of the mind, creative functioning and percept-genetic reconstruction. *Psychoanalysis and Contemporary Thought*, 21, 359-382.
- Andersson, A. L. & Ryhammar, L. (1999). Personality of university teachers according to the Defense Mechanism Technique modified (DMTm) as related to their assessment of their university as an organizational setting. *Social Behavior and Personality*, 27, 575-586.
- Andersson, A. L. & Weikert, C. (1974). Adult defensive organization as related to adaptive regulation of spiral aftereffect duration. *Social Behavior and Personality*, 2, 56-75.
- Arvonen, J. & Ekvall, G. (1999). Effective leadership style: Both universal and contingent? *Creativity and Innovation Management*, 8, 242-250.
- Bass, B. M., Avolio, B. J. & Atwater, L. (1996). The transformational and transactional leadership of men and women. *Applied Psychology: An International Review*, 45, 5-34.
- Claesson, A. & Olsson, L. (1995). Självskattad coping och dess förhållande till personlighet enligt SAT och DMTm. *Psykologi i tillämpning, Lunds universitet*, 13, Nr 1.
- Ekvall, G. (1985). Organisationsklimat. Teori och forskning. *Psykologi i tillämpning, Lunds universitet*, 3, Nr 1.
- Ekvall, G. (1987). The climate metaphor in organization theory. In B. M. Bass & P. J. D. Drenth (Eds), *Advances in organizational psychology*. London: Sage. Pp 177-190.
- Ekvall, G. (1996). Organizational climate for creativity and innovation. *European Journal of Work and Organizational Psychology*, 5, 105-123.
- Ekvall, G. & Arvonen, J. (1991). Change-centered leadership: An extension of the two-dimensional model. *Scandinavian Journal of Management*, 7, 17-26.
- Ekvall, G. & Arvonen, J. (1994). Leadership profiles, situation and effectiveness. *Creativity and Innovation Management*, 3, 139-161.
- Ekvall, G., Arvonen, J. & Nyström, H. (1987). *Organisation och innovation*. Lund: Studentlitteratur.
- Ekvall, G., Frankenhaeuser, M. & Parr, D. (1995). *Change-oriented leadership, stress and creative organizational climate*. Stockholm: FA-council.
- Ekvall, G., Nyström, H. & Waldenström-Lindblad, I. (1985). Organisationsklimat och innovativ förmåga. En jämförande studie av tre industriföretag. *Psykologi i tillämpning, Lunds universitet*, 3, Nr 2.
- Ekvall, G. & Ryhammar, L. (1998). Leadership style, social climate and organizational outcomes: A study of a Swedish university college. *Creativity and Innovation Management*, 7, 126-130.

- Ekvall, G. & Ryhammar, L. (1999). The creative climate: Its determinants and effects at a Swedish university. *Creativity Research Journal*, 12, 303-310.
- Hallborg, A. & Andersson, A. L. (2002). Spiral Aftereffect Technique (SAT) och Defense Mechanism Technique modified (DMTm) efter tillfrisknande från depression i relation till symtomdimensioner och personlighetsrekonstruktion under det akuta skedet. *Psykologiska rapporter från Lund, Lunds universitet*, 3, Nr 2.
- Hentschel, U. & Smith, G. J. W. (Hrsg) (1980). *Experimentelle Persönlichkeitspsychologie. Die Wahrnehmung als Zugang zu diagnostischen Problemen*. Wiesbaden: Akademische Verlagsgesellschaft.
- Hogan, R., Curphy, G. J. & Hogan, J. (1994). What we know about leadership. Effectiveness and personality. *American Psychologist*, 49, 493-504.
- Kohut, H. (1971). *The analysis of the self*. New York: International Universities Press.
- Kohut, H. (1977). *The restoration of the self*. New York: International Universities Press.
- Kohut, H. (1984). *How does analysis cure?* Chicago: University of Chicago Press.
- Kragh, U. & Smith, G. J. W. (Eds) (1970). *Percept-genetic analysis*. Lund: Gleerup.
- Montgomery, E. (2002). *Drogval, kön och personlighet. En perceptgenetisk undersökning av narkomaner*. Lund: Institutionen för psykologi, Lunds universitet.
- Nystedt, L. (1997). Who should rule? Does personality matter? *European Journal of Personality*, 11, 1-14.
- Petersson, B. Å., Andersson, A. L. & Nilsson, Å. (1997). Anpassnings- och personlighetsstörning hos unga vuxna i relation till kliniska bedömningar och personlighet enligt SAT och DMTm. *Psykologi i tillämpning, Lunds universitet*, 15, Nr 3.
- Rubino, I. A. (1987). *La ricerca percettogenetica*. Rome: Borla.
- Ryhammar, L. (1996). *Kreativ funktion, perceptgenetisk rekonstruktion och organisatoriska förutsättningar för kreativ verksamhet. En studie av högskolelärare*. Lund: Lund University Press.
- Ryhammar, L. & Andersson, A. L. (2001). Relations between university teachers' assessed degree of creativity and productivity and views regarding their organization. *Journal of Creative Behavior*, 35, 199-204.
- Smith, G. J. W. (2001). *The process approach to personality. Perceptgeneses and kindred approaches in focus*. New York: Kluwer.
- Thurley, K. & Wirdenius, H. (1973). *Supervision: A reappraisal*. London: Heineman.