
ACTION AND EMOTION IN EVERYDAY LIFE¹

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ABSTRACT

This study of naturally occurring behavior employed a "beeper technique" to investigate the actions carried out by 152 subjects in eight different groups, viz. adult students, employed students who were also parents, unemployed, art students, doctoral students, alcoholics, retired people and a control group. Actions were sampled for seven subsequent days, five times per day between 8 a.m. and 10 p.m. at randomly selected occasions. Each action was rated on a number of variables, shortly after it was sampled (median delay approximately 10 min). Some of the findings were: Time allocation corresponded well with national estimates. Being under situational control was highly aversive. Instrumental and consummatory orientations correlated positively. The background variables were, on the whole, only rather weakly related to action ratings, but it was found that women and retired persons tended to report a higher level of well-being.

Key words: Emotion, action sampling, well-being.

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INTRODUCTION

Although behavior is a central and classical concept in psychology it has seldom been explicated (Sjöberg, 1983) and even more seldom studied in natural settings. The best known exception is that of ecological psychology (Barker, 1968), which will be further discussed below. The reasons for the neglect of the study of naturally occurring behavior are probably both practical and theoretical. Practically, it is not straightforward how one should go about studying behavior in natural settings. Theoretically, and perhaps more interesting, the notion of studying naturally occurring behavior immediately exposes inherent weaknesses in the behaviorist position. Such behavior cannot be observed only from "the outside" of a person. It is obvious that what a person does is not revealed by his or her "overt movements" and that asking about actions is the only really feasible way of finding out.

Ecological psychology was, for a number of years, the only attempt at studying naturally occurring behavior in psychology. In spite of the fact that ecological psychology has been established for at least 30 years, and in spite of the frequent lip-service paid to the importance of studying ecologically relevant conditions and behavior (Brunswik, 1956; cf. Sjöberg, 1971), the ecological approach has made little impact on mainstream work in psychology.

It should be added here that ecological psychology early turned from investigations of actually occurring individual behavior, as exemplified in a famous book length report on one boy's day by Barker and Wright (1951), and concentrated on mapping the environment in terms of behavior settings (Barker *et al.*, 1978; Wicker, 1988). This work has produced some fruitful insights, especially into the importance of some organizational variables for measuring behavior and quality of life, most notably the size of organizations and the associated concept of manning of behavior settings (Barker & Gump, 1964; Wicker, *et al.*, 1972). However, the individual perspective is lost in this approach which may, in the long run, turn out to be more congenial with sociological and geographical mappings of the environment (Chapin, 1974; Robinson, 1977; Szalai *et al.*, 1972) than with a psychological approach.

Hence, there is a lack of knowledge concerning the psychological aspects of naturally occurring behavior. The general purpose of the work reported here was to study such naturally occurring, everyday life behavior, by investigating behavior samples in groups of people which can be expected to differ in interesting ways when it comes, among other things, to external restrictions on their acts.

The empirical study of behavior is difficult for several reasons. One of the most important reasons is a lack of agreement on definitional issues. The present approach is that of studying *acts*. Acts are naturally bounded and phenomenologically

present entities. We assume that asking a person what he or she does produces a description of the act the person is engaged in, as he or she conceives it.

Acting is perceived as a type of mental activity under conscious control. Acting is a kind of mental activity, but all mental events are not acting. Counter examples to acting are dreaming and day dreaming. In the following we shall use action and behavior as synonyms.

Observations of naturally occurring behavior may be performed either by the actor or by an observer and they may be simultaneous or retrospective. Since the actor may be assumed to have privileged access (Harre' & Secord, 1972) to some important types of information, we have preferred to work with data generated by self observation reports. Since forgetting and other types of memory distortion are unavoidable in retrospective reports, we have also tried to obtain data as quickly as possible after the act has been carried out.

Our solution to the problem of studying naturally occurring behavior utilizes time sampling. At certain points in time, picked at random, persons are asked to give a report about their present activity. A few previous studies have utilized such an approach (e.g., Csikszentmihalyi, 1975; Brandstätter, 1981, 1983; Pawlik & Buse, 1982; Sjöberg, 1981). Note that this is a quite different approach from the one often used by economists and sociologists, which entails the collection of retrospective reports about chunks of time in diaries. It is also quite different from asking persons to report how much time they have spent on various types of activities. It must, in such studies, be assumed that the types of activities are understood in the same way by the researcher and the subject. Examples of current work with such an orientation are given by Eliasson and Klevmarken (1981) and Klevmarken, 1984; 1986).

Since we shall have reason to return to Klevmarken's results, some more detailed remarks on his methods are in order. The basic method used by him was a "yesterday question technique" based on a method devised at ISR, University of Michigan (Klevmarken, 1986). In this method the subject is interviewed about all activities that he or she carried out during the preceding 24 hours and is asked to indicate, for each activity, when it started and ended. Activities are classified into 78 categories and then further aggregated into 10 broad groups, *viz.* market work, household work, care and sleep, purchase, repair and maintenance, education, pleasure and recreation, travel, other communication and miscellaneous. Although these categories seem to have been motivated primarily by economical considerations and commonsense considerations, we shall find them useful for comparative purposes.

According to Klevmarken the method gives results quite comparable to a "beeper technique", which is more similar to our method. Klevmarken compared the yesterday question technique with time estimates based on retrospective reporting of 14 days of activities and found clear under-reporting in the latter case, while the yesterday question technique according to him seemed to yield reliable

results since the results agreed with those obtained in other countries with the same technique: in US data, and with a diary of the "leave behind" type in Finnish data, see Flood (1983). It will be informative in the present study, to compare the results obtained with those reported by Klevmarken for a nationally representative sample.

Summing up, the purpose of the present study was to investigate the way everyday actions are described and explained by the actors themselves and to relate the perceived properties of these actions to internal and external determinants.

METHOD

Subjects

Subjects belonged to eight different groups, described in detail below².

Adult students. In this group, a total of 20 subjects participated, 12 women and eight men, their mean ages being 24 and 31 years respectively. All the subjects were full-time students attending adult education courses. Only four of them had some part-time work.

Employed students. A total of 20 subjects participated, 12 women and eight men, their mean ages being 33 and 32 years respectively. Ten worked full-time and the rest between 40 percent and 80 percent. The most common rate of participation in evening classes was once a week.

Unemployed persons. A total of 20 subjects participated, seven women and 13 men, their mean ages being 25 and 26 years respectively. All were registered as unemployed.

Art students. A total of 20 subjects participated, 11 women and nine men, their mean ages being 30 and 29 years respectively. All attended Art College at the University of Göteborg.

Doctoral students. A total of 20 subjects participated, seven women and 13 men, their mean ages being 42 and 31 years respectively. All were doing research and all were studying for a Ph.D.

Alcoholics. A total of 20 subjects participated, 10 women and 10 men, their mean ages being 46 years for both groups. All regularly attended a polyclinic for treatment of alcoholics. They were committed to staying sober during treatment; relapses were relatively rare.

Retired people. A total of 20 subjects participated, 10 women and 10 men, their mean ages being 67 years for both groups. All had been retired for two years, but three still worked a considerable number of hours a week.

Control group. A random sample of 2 000 persons living in Göteborg and three neighboring municipalities was first obtained. From this sample we obtained a random selection of persons, given the restrictions that (a) they should be between 20 and 70 years old, (b) there should be an equal number of males and females and (c)

²Further information is available in Sjöberg & Magneberg (1987).

all income classes should be represented. The total control group was also constrained so as to have a rectangular distribution of age and income. The persons selected for the control group were initially approached by means of a letter which described the study. A week later, a phone call was made, as stated in the letter. Approximately 80 percent of the men and 70 percent of the women agreed to participate in the study. A total of 20 subjects participated, 10 women and 10 men, their mean ages being 45 and 44 years respectively.

Procedure

Each subject was given 35 copies of the questionnaire, a pocket size paging receiver and written instructions stating that signals were to be expected five points of time each day for seven subsequent days. The paging receiver made it possible to reach all subjects simultaneously wherever they were in Sweden by means of the FM broadcasting network. The transmitting times for the signals were selected at random, after having divided the day into five time periods. Every signal sent to the subjects was initiated by the investigator. Subjects did not know in advance when a signal was about to be transmitted.

The subjects were instructed to carry the pager from the time they woke up until the time they went to bed, with the modification that no signals were to be transmitted before 8 a.m. or after 10 p.m. When the signal was received, the subjects were to register and evaluate what they were doing at that very moment, preferably immediately, but otherwise as soon as it was convenient. They were to use the questionnaire and answer all of the questions. A numerical device on the pager showed in a coded form the consecutive order of the signal each day, along with a code showing the time the signal was transmitted. The code for the consecutive order made it possible for the subjects to realize, at an early stage, if a signal had passed unnoticed. The time-code was to be written down on the questionnaire along with the time when the subject actually answered it. The pager could memorize two time codes, which could be useful in cases when the next signal came before they had been able to respond to the former.

The subjects were instructed to try to ignore the fact that they were carrying the pager and to carry on with everyday life as normal. When the study was completed after one week, the paging receiver and the questionnaires were returned.

Questionnaire

The questionnaire had 29 questions, some of which had sub-questions, (see Appendix A, Sjöberg & Magneberg, 1987). There were two main types of questions - open questions and rating scales. In the former category, the subjects were first asked to state what they were doing when the signal arrived, and if they were doing something else simultaneously. Then they were asked about their location and later about the most direct cause of their mood and what the goal of their action was.

Finally, at the end of the questionnaire they had to state, if possible at four levels of abstraction, the reasons they had for performing the action stated. The questions were coded according to a constructed schedule with a large number of categories for each question (given as Appendix B in Sjöberg & Magneberg, 1987).

The subjects were also asked to rate several aspects of the action. The following questions used a bipolar rating scale with five categories:

- mood (eight scales of mood dimensions described by Sjöberg *et al.*, 1979)
- own initiative
- preference to do something else
- how close (timewise) the action was to the goal
- frequency of the action
- importance of the action
- anticipated result
- estimated morality (alt. - if the question was not relevant)
- ease of performing the action
- to what extent the action hindered or facilitated other goals
- possibility to influence the situation
- possibility to leave the situation
- if the action was regretted
- how pleasant it was to perform the action
- the situational stress

The following questions used a unipolar rating scale with five categories:

- emotions (eight scales of emotional dimensions described by Tomkins and Izard; see e.g., Izard, 1977)
- external circumstances (three scales of the extent to which the action was facilitated, blocked or steered by the environment).

Ratings were to be made for each of the four open questions in the last part of the questionnaire where the subjects were asked to give a "deeper" explanation of each action. They were asked to rate, on a bipolar rating scale with five categories, to what extent the action was carried out:

- for what it might lead to (instrumental action - goal orientation)
- for its own sake (consummatory action - value orientation)
- because of external circumstances (situational causation - situational orientation)

The subjects were also given a chance to give reasons other than the three types stated. Further, there was one question whether the mood was due to the past, present or the future, using a bipolar scale with three categories. Another question dealt with the duration of the action, using a unipolar scale with five categories³.

³The time required to perform the action was rated. The response categories were <15 min, 15 min-1 h, 1-2 h, 2-8 h, >8 h and "unfinished". However, the last category was considered

Finally one question asked about other participants in the action. Here the actually reported number was coded if these other persons could be considered significant; "class" was coded as 20.

RESULTS

The reply frequency was 91 percent of all signals and must be considered quite high for a study conducted in the everyday environment of the subjects.

The actions were coded by two persons. The within judge reliability (the proportion of equal judgments) was 0.76 and 0.60, respectively, and the between judge reliability was 0.81 and 0.61, respectively.

The median time-elapse between signal and questionnaire response was 10 min and must be considered quite acceptable.

Comparison with national sample

Interpretation of the present data is facilitated by a comparison with data reported by Klevmarken (1986). Klevmarken studied a random sample of the Swedish population. Using retrospective interviews he divided the 24 hours of a day and night into 10 categories and gave estimates of mean time spent on each category. The categories used were: 1. Market work, 2. Household work, 3. Care and sleep, 4. Shopping, 5. Repair and maintenance, 6. Educational activity, 7. Pleasure and recreation, 8. Travel, 9. Other communication, 10. Miscellaneous.

The different action categories in Table 1 have been grouped and ordered according to Klevmarken's categories. In order to compare with our data, we had to pool some of our categories and to exclude a few. Since we did not sample any actions between 10 p.m. and 8 a.m., an estimation of the frequencies of different actions during these 10 hours had to be made. We assumed that our subjects slept the same amount of time per 24 hours as Klevmarken's subjects. The amount of sleep and rest daily during the 14 hours investigated in our study, including the occasions when no report was given because of sleep, was subtracted from the total amount of sleep and rest in Klevmarken's data. The remaining amount of time for sleep and rest was subtracted from our 10 hours, leaving us with 11-12 percent of the time unaccounted for⁴. This time was proportionally distributed onto relevant action categories. In Figure 1 the result of this comparison is presented, both in reference to all our subjects and to the control group alone. Unfortunately our data do not permit us to separate eating and drinking from other action categories. An estimation of time allocation for this type of actions alone would be

unclear since it could refer to activity ongoing at the time of rating and responses in that category were scored as missing data.

⁴In the original article the last two sentences were mixed up to one.

approximately 10 percent of the 14 hours every day. This would increase the total amount of time in category 3 above for our subjects with some 5-6 percent, with a proportional decrease for other categories.

On the whole, it is interesting to note the correspondence between the different groups of data. The different methodology apparently does not give substantial differences on this level of aggregation.

Table 1
Percentage of Different Actions for the Eight Groups

Type of action	Group ^a							
	AdS	EmS	Uem	ArS	DoS	Alc	Ret	Con
Paid work	2.5	18.0	1.0	1.1	5.2	11.8	2.3	15.0
Break, waiting	2.8	2.6	0.9	1.8	0.8	2.7	0.7	1.5
Seeking employment	-	-	1.7	-	0.8	0.2	-	-
Housework	7.3	10.2	10.9	9.8	8.0	13.7	19.3	17.8
Rest, sleep	4.3	1.8	3.6	4.4	2.0	2.7	2.2	1.5
Personal hygiene	3.7	3.8	4.0	4.0	1.6	2.5	4.2	2.4
Personal beautification	1.1	0.5	0.2	0.4	0.5	0.9	0.6	0.7
Care of children	0.8	5.5	-	3.5	4.9	-	0.6	3.6
Care of pets	0.5	-	1.4	0.2	0.3	0.8	1.0	0.2
Confined to bed	-	0.5	-	0.4	-	-	-	-
Running an errand	3.6	1.5	3.5	1.8	2.1	3.3	4.4	4.3
Health care	0.6	0.4	-	0.2	0.3	0.5	0.7	0.7
Psychiatric care	-	-	-	-	0.2	0.3	-	-
Repair work	0.3	0.2	1.9	1.8	0.3	0.8	0.9	4.4
Education	25.7	11.7	3.3	19.5	29.0	1.1	0.1	1.7
Acquiring information	6.6	3.5	10.2	3.5	7.5	5.8	11.3	5.3
Examinations	2.0	0.9	0.2	-	-	-	-	-
Relationship with others	12.1	17.9	15.4	20.9	12.1	12.3	7.7	11.1
Relationship with spouse	0.6	0.5	0.9	1.3	0.8	0.6	0.3	0.3
Recreation, relaxation	9.4	5.5	13.7	4.4	5.4	17.0	17.3	10.6
Places of entertainment	1.1	0.5	2.6	1.5	0.7	1.4	1.2	0.9
Special hobbies	0.8	2.4	3.6	2.2	2.6	2.5	6.7	1.7
Walks, exercise	1.9	0.7	1.4	1.1	0.8	2.1	4.4	3.1
Voluntary work	0.3	0.7	0.3	0.7	1.3	-	-	-
Visits to church, club etc.	-	-	0.4	0.2	0.9	0.2	0.5	0.4
Looking at something	-	-	-	1.1	0.3	-	-	0.5
Transportation	10.2	8.9	12.8	10.5	8.8	9.0	5.8	6.3
Writing letter, diary	0.3	-	1.0	0.2	0.7	0.8	1.0	-
No significant answer	1.5	0.9	4.2	2.4	2.1	4.7	5.7	5.8
No real actions	0.2	0.5	1.0	0.7	0.6	1.9	1.0	0.6

^aAdS=Adult students, EmS=Employed students, Uem=Unemployed, ArS=Art students, DoS=Doctoral students, Alc=Alcoholics, Ret=Retired people, Con=Control group.

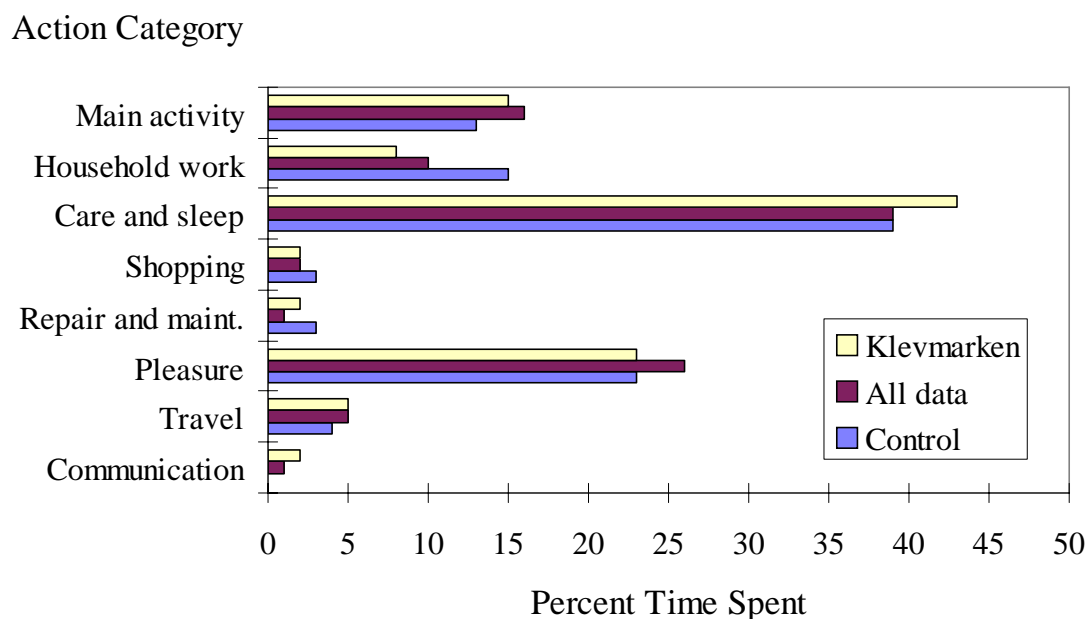


Figure 1. Percentages of time spent in different action categories for Klevmarken's group, all of our 152 subjects and the 19 subjects in our control group.

Group and action differences

Action preferences. How well, then, did people in general like to perform the different types of actions? Table 2 shows the means over all groups for Klevmarken's different action categories. A univariate ANOVA gave a level of significance $p < 0.0001$ for the differences among the action categories. To facilitate reading Table 2, the different action categories are ordered in rank according to how pleasant they were. Average percentages of time allocation for the 14 hours every day are also shown. For reasons given above, sleeping was excluded from the category "Care and sleep" in our data.

Table 2

Time Allocation and Pleasantness to Perform Different Actions (All Groups)

Action category ^a	Time (%)	Pleasantness
3 Care and sleep	9.7	4.16
9 Other communication	0.5	4.15
7 Pleasure and recreation	31.7	4.12
6 Educational activity	18.6	3.91
8 Travel	9.0	3.79
4 Purchase	3.6	3.64
5 Repair and maintenance	1.3	3.63
1 Market work	9.2	3.60
10 Miscellaneous	4.2	3.53
2 Household work	12.1	3.44

^a Klevmarken's categories.

There is a clear distinction between the first three action categories and the last seven ones, implying that people prefer to take it easy and have fun, instead of being oriented towards instrumental actions. Household work seems to be the most boring activity of all. But does this result hold if data is broken down into different groups? A two-way ANOVA gave significant differences both between groups ($p=0.0001$) and categories ($p=0.0001$), as well as a significant interaction ($p=0.0088$). The means are shown in Table 3.

Table 3
Pleasantness to Perform Different Actions for Each of the Eight Groups

Action-category ^a	Group ^b							
	AdS	EmS	Uem	ArS	DoS	Alc	Ret	Con
1 Market work	3.29	3.78	2.85	2.83	3.60	4.12	4.73	3.62
2 Household work	3.42	3.13	3.39	3.35	3.00	4.03	3.78	3.53
3 Care and sleep	4.33	3.98	4.11	4.11	3.85	4.58	4.08	4.13
4 Shopping	3.41	3.90	3.25	3.50	3.75	3.84	4.03	3.74
5 Repair and maintenance	1.50	5.00	3.90	3.29	5.00	4.33	3.83	3.52
6 Educational activity	3.69	4.08	3.98	4.06	3.72	4.12	4.29	3.73
7 Pleasure and recreation	4.14	4.10	3.97	3.84	3.83	4.23	4.44	3.87
8 Travel	3.78	3.73	3.53	3.69	3.65	4.14	3.96	3.89
9 Other communications	5.00	-	3.67	-	3.50	4.20	4.57	-
10 Miscellaneous	3.00	4.00	3.67	4.33	2.00	3.82	3.75	3.50

^a Klevmarken's categories.

^b AdS=Adult students, EmS=Employed students, Uem=Unemployed, ArS=Art students, DoS=Doctoral students, Alc=Alcoholics, Ret=Retired people, Con=Control group.

The variability in pleasantness across the eight groups varied considerably, about 1:5. A plot of mean pleasantness against between group standard deviations is given in Figure 2. There is a U-shaped trend suggesting that low attractiveness is associated with a medium level of variability. There are apparently some activities well liked by most people, some disliked by rather many and then some activities favored greatly by a minority. These may constitute specialized interests.

Time allocation. Turning now to comparisons of the various groups of subjects, it was found that the groups differed in the amount of time spent in gainful employ-

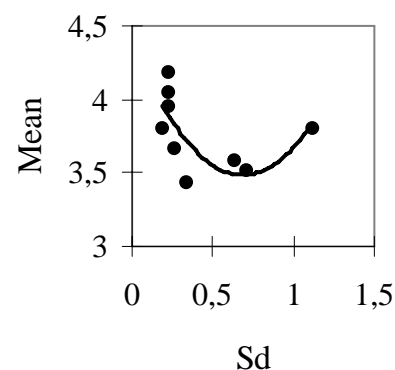


Figure 2. A plot of mean pleasantness against between group standard deviations.

ment or educational situations. And for obvious reasons the group of retired people spent more time relaxing than did any other group, doctoral students and employed students being worst off in this respect. The art students seemed to be the most sociable group, mingling a lot with others, while the retired people did not. Retired people instead seemed to read and write a great deal for personal satisfaction, while the employed students and the art students invested little time in this kind of activity. Not surprisingly, both the retired people and the unemployed seemed to have time to spend on hobbies, activities in voluntary organizations and the like, while the adult students probably were too busy for this.

Aspects of action and emotions. Next, the eight groups were compared in all rating and background variables. To extend these analyses, some relevant index variables were created. The stated questions refer to a questionnaire in Sjöberg and Magneberg (1987, Appendix A).

Mood is an index variable for the eight variables of mood dimensions in question 4. *Instrumental value* is an index variable calculated as the mean over all four levels of reasons of the first aspect in questions 26-29. *Consummatory value* is an index variable calculated as the mean over all four levels of reasons of the second aspect in questions 26-29. *Environmental influence* is an index variable calculated as the mean over all four levels of reasons of the third aspect in questions 26-29. *Depth of intention* is an index variable calculated as the number of reasons given for a single action in questions 26-29.

The eight groups were compared in all variables, both rating and background variables, along with the mentioned index variables, using univariate ANOVAs. There were significant differences in several variables, as specified in Table 4.

We will first summarize the differences that can be found in Table 4 between the control group and retired persons and unemployed. The differences with respect to the other groups will be discussed below with reference to a further break down of the actions.

As compared to the controls, *the unemployed* differed in time to goal, seeing the goal as more distant; in mood, being lower in mood, and in conceiving of the environment as less influential.

The retired persons, compared to the controls, gave quite a different picture. They saw themselves as acting more on their own initiative and were less likely to wish they were doing something else. They felt more free to leave the situation. They liked what they were doing better. Their stress level was lower and their mood was better.

The groups were next compared in their main activity (work or studies, including research). Separate ANOVAs were run for main activities and for all other activities combined. The groups consisting of unemployed and retired persons were not included in these analyses because they had no "main activity" corresponding to work or studies in the other groups. The results for variables in

which groups differed at least at the 0.05 level of significance are given in Tables 5 and 6.

Table 4

Mean Values for Rating, Index and Background Variables for the Eight Groups Exhibiting Significant Differences

Variable	Groups ^a								<i>p</i>
	AdS	EmS	Uem	ArS	DoS	Alc	Ret	Con	
<i>Rating variables</i>									
Own initiative	4.04	3.84	4.23	4.10	4.26	4.27	4.42	4.13	0.004
No. of others present	5.22	3.56	2.18	2.50	2.21	1.44	1.70	1.58	0.000
Do something else	2.51	2.47	2.79	2.55	2.50	2.29	2.16	2.53	0.023
Closeness to goal	3.46	3.83	3.54	3.78	3.89	3.81	4.10	3.92	0.001
Commonness	3.74	3.69	3.71	3.65	3.78	4.00	4.02	3.88	0.049
Estimated morality	3.53	2.64	2.21	2.58	2.11	3.47	2.97	2.24	0.046
Ease to perform	4.11	4.19	4.31	3.94	4.05	4.43	4.46	4.37	0.001
Facilitate other goals	3.37	3.29	3.45	3.86	2.99	3.50	3.45	3.42	0.009
Free to leave	3.42	3.45	3.90	3.60	3.58	3.81	4.06	3.53	0.050
Pleasantness	3.90	3.94	3.82	3.85	3.72	4.17	4.21	3.83	0.004
Lack of stress	3.73	3.52	4.00	3.35	3.15	4.02	4.46	3.78	0.000
<i>Index variables</i>									
Mood	3.71	3.63	3.46	3.49	3.43	3.96	4.17	3.76	0.000
Environmental influence	2.77	3.02	2.28	3.17	2.99	3.12	2.64	2.84	0.046
Depth of intention	1.97	1.87	1.91	2.56	2.49	1.88	2.07	1.80	0.014
<i>Background variables</i>									
Educational background	1.85	1.71	1.80	2.11	3.37	1.37	1.85	1.53	0.000
Number of hours of paid work per week	2.35	34.59	.075	3.44	-	20.32	3.65	24.95	0.000
Social living	2.35	3.53	2.25	3.28	3.21	2.68	3.70	3.16	0.000
Number of children	0.45	1.41	0.10	0.61	0.89	0.32	-	1.37	0.000
Age	27.10	32.71	25.95	29.94	35.32	46.26	67.00	44.32	0.000

^aAdS=Adult students, EmS=Employed students, Uem=Unemployed, ArS=Art students, DoS=Doctoral students, Alc=Alcoholics, Ret=Retired people, Con=Control group.

^b1=Living with parents, 2=Living alone, 3=Living with partner, 4=Married, 5=Living in a collective community.

It is clear that the groups differed more when it came to the main activity than in other respects. There were also some interesting differences between main and other activities.

Adult students rated their main activity mainly as high in moral value. They also rated other activities high in that respect, but found such other activities more distant from the goal than the control group. There was a non significant trend to-

wards an expression of a certain feeling of restraint in the main activity, which was performed in large groups.

Employed students were especially low in own initiative when it came to other activities than the main one. Actions other than the main activity were of particularly short duration. They were acting in rather large groups in their main activity.

Table 5
Mean Values for Rating Variables and One Index Variable for Six Groups Exhibiting Significant Differences - Main Activity

Variable	Groups ^a						<i>p</i>
	AdS	EmS	ArS	DoS	Alc	Con	
<i>Rating variables</i>							
Own initiative	3.56	3.80	4.38	4.29	4.03	3.84	0.006
No. of other present	11.96	4.46	1.81	2.50	1.95	1.42	0.000
Duration of action	2.77	2.39	2.45	2.69	2.29	2.06	0.043
Estimated morality	3.62	2.53	2.95	1.89	3.44	2.12	0.044
Ease to perform	3.41	3.66	2.95	3.46	4.34	3.93	0.000
Influence situation	3.21	3.72	4.31	3.98	3.33	3.43	0.003
Free to leave	2.62	3.21	3.80	3.48	3.32	2.98	0.034
Lack of stress	3.53	3.24	2.89	2.87	3.71	3.02	0.005
<i>Index variables</i>							
Depth of intention	2.40	2.26	3.06	2.76	1.80	2.06	0.000

^aAdS=Adult students, EmS=Employed students, ArS=Art students, DoS=Doctoral students, Alc=Alcoholics, Con=Control group.

Table 6
 Mean Values for Rating Variables and Index Variables for Six Groups Exhibiting Significant Differences - All Activities Except Main Activity

Variable	Groups ^a						<i>p</i>
	AdS	EmS	ArS	DoS	Alc	Con	
<i>Rating variables</i>							
Own initiative	4.18	3.86	4.00	4.26	4.32	4.19	0.015
Duration of action	2.16	1.98	1.99	2.08	2.28	2.24	0.041
Closeness to goal	3.50	3.98	3.91	4.11	3.86	4.05	0.002
Estimated morality	3.53	2.69	2.54	2.22	3.49	2.17	0.031
Facilitate other goals	3.28	3.15	3.76	2.85	3.47	3.40	0.002
Pleasantness	4.05	3.98	3.84	3.73	4.21	3.88	0.015
Lack of stress	3.83	3.64	3.49	3.28	4.13	3.93	0.001
<i>Index variables</i>							
Mood	3.70	3.57	3.45	3.34	3.94	3.74	0.003
Depth of intention	1.80	1.71	2.41	2.30	1.87	1.79	0.019

^aAdS=Adult students, EmS=Employed students, ArS=Art students, DoS=Doctoral students, Alc=Alcoholics, Con=Control group.

Art students were high in own initiative and saw their main activity as something they were free to leave and could influence. They regarded their main activity as difficult. In non-main activities their stress level was high and their mood was low, they saw goals as distant. In both kinds of activities they developed especially many steps in their analysis of intention of their main activity.

Doctoral students saw their main activity as something they could influence. They were stressed and saw obstacles to other goals especially in non-main activities. Their mood was especially low in such activities.

Alcoholics showed essentially similar profiles for main activity and leisure. They were low in stress level in the main activity. In non-main activities they rated moral value as particularly high and they also seemed to like such activities more than the control group.

Structural analysis

The variables of the questionnaire were grouped to form six indices, viz. *freedom from constraints, value, mood, emotional reactions, situational control* and *instrumental value*.

Each group was standardized separately using the individual means for each subject. The correlation matrix for these six indices, computed across all subjects and actions is given in Table 7.

Table 7
Correlation Matrix for Six Index Variables

Index ^a	I1	I2	I3	I4	I5	I6
I1	-					
I2	0.239	-				
I3	0.320	0.598	-			
I4	-0.318	-0.196	-0.194	-		
I5	-0.353	-0.013	0.074	0.435	-	
I6	0.226	0.672	0.562	-0.041	0.170	-

^aThe indices refer to those mentioned in the text, in that order.

The matrix was used as the empirical basis for testing models of the causal flow between the variables. Situational control and instrumental value were treated as exogenous and the other variables as endogenous in the models. LISREL VI was used for testing and estimation of parameters. The model given in Figure 3 was found to give a good fit, a chi-square of 4.23 with 5 degrees of freedom ($p=0.51$). The goodness of fit index was 0.991, the adjusted goodness of fit index 0.963 and the root mean square residual 0.023. The total coefficient of determination for structural equations was 0.665.

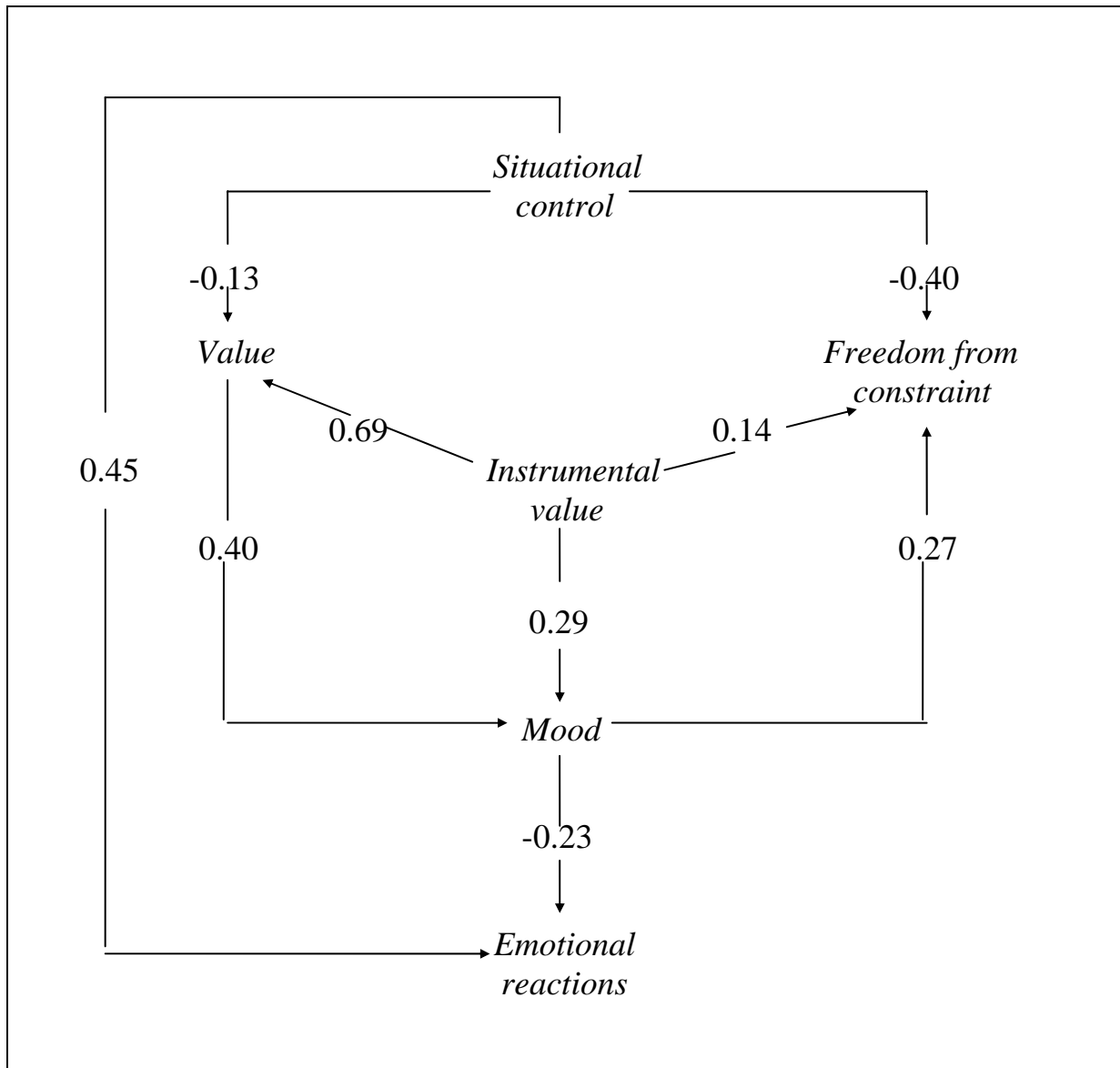


Figure 3. The LISREL model for the six index variables.

With this model, modification indices were small and all normalized residuals were less than 2. All structural parameters in Figure 3 have t -values > 2 .

The model suggests that being under the control of the situation is quite aversive, both in leading to a felt lack of freedom and in negative emotional experience. Instrumental action, on the other hand, is well liked and leads to a positive mood and to liking. It is noteworthy that the strongest direct effect of instrumentality is that produced on liking. There is also a rather strong link from liking to mood. Aversive emotions seem to be influenced both directly by environmental control and by mood.

Background variables

Education, number of hours of gainful employment per week, number of children at home, sex and age were correlated with the individual means of all rating variables. There were some significant correlations as shown in Table 8⁵.

Table 8
Correlations Between Individual Means and Background Variables, N=152

Variable	Education	Work ^a	Children ^b	Sex ^c	Age
<i>Rating variables</i>					
Own initiative		-0.24**			0.30***
No. of others present					-0.31***
Duration of action		-0.20*	-0.18*		0.20*
Do something else					-0.32***
Closeness to goal					0.32***
Commonness					0.28***
Importance	-0.24**			0.26**	
Steering environment			0.22*		
Positive result				0.23**	
Estimated morality	-0.24**				
Rel. of moral value ^d	0.26**				
Ease to perform				0.21*	0.21*
Facilitate other goals	-0.17*				
Free to leave		-0.17*	-0.26**		0.20*
Pleasantness	-0.18*				0.30***
Lack of stress	-0.27***		-0.26**		0.34***
<i>Index variables</i>					
Mood	-0.19*			0.20*	0.41***
Consummatory value	-0.30***			0.23**	
Depth of intention	0.17*				
<i>Background variables</i>					
Hours per week of paid work			0.24**		
Social living			0.46**		0.34***
Number of children		0.24**			

^aThe number of hours of paid work per week.

^bThe number of children at home.

^c1= male, 2= female.

^d0= relevant, 1= not relevant.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

⁵In the original article the contents of Table 8 and 9 were mixed up.

All correlations with ratings of actions and background variables were rather weak. Age and educational background seemed to be the most important aspects, while number of hours of work per week appeared to be quite unimportant.

Selected aspects of actions

The present data allow a number of selected questions to be analyzed. For the present paper we have chosen to analyze the five index variables used in the structural analysis. The correlations between these index variables and rating variables are shown in Table 9.

Table 9
Correlations Between Individual Means and Five Index Variables, N=152

Variable	Mood	Emo. ^a	Instr. ^b	Consu. ^c	Depth ^d
<i>Rating variables</i>					
Own initiative	0.29***				
Duration of action					-0.21*
Do something else	-0.44***	0.18*	-0.17*	-0.22**	
Closeness to goal		-0.19*			
Commonness	0.38***				
Importance	0.48***		0.44***	0.61***	
Facilitating environment	0.19*		0.31***	0.25**	0.28***
Inhibiting environment		0.50***	0.23**		
Steering environment		0.35**			
Positive result	0.59***	-0.20*	0.46***	0.45***	
Estimated morality	0.25**		0.25**	0.31***	
Rel. of moral value ^d	-0.20*	-0.22**	-0.19*	-0.29***	
Ease to perform	0.48***	-0.38***			
Facilitate other goals	0.32***		0.21**	0.29***	
Influence situation		-0.28**			
Free to leave	0.29**	-0.25**			
Regrets		0.34***			
Pleasantness	0.68***	-0.22**	0.27**	0.31***	
Lack of stress	0.54***	-0.23**			-0.31***
<i>Index variables</i>					
Instrumental value	0.34***				
Consummatory value	0.32***		0.48***		
Environmental influence		0.30***	0.23**	0.23**	0.23**
Depth of intention			0.20*	0.17*	

^aAversive emotions.

^bInstrumental value

^cConsummatory value

^dLevel of articulation

^e0= relevant, 1= not relevant

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

Some of these correlations are surprisingly strong. In previous work on mood and expectations (Appel *et al.*, 1980; Sjöberg *et al.*, 1982; Persson & Sjöberg, 1985; Sjöberg, in press) only rather weak correlations between mood and expected outcomes were found. It deserves a special note that aversive emotions did not correlate to any noticeable extent with mood. Note also the very strong correlation between mood and liking; people seem to like being in a good mood.

The picture is rather clear. Aversive emotions tend to arise particularly when the person is forced by the situation to act and when he or she feels unfree, also when the act is difficult. Such acts are not well liked and they tend to be regretted. They promote a certain degree of reflection.

The two measures of instrumental and consummatory value, obtained by taking the mean across all levels of articulation utilized by a subject, were rather concordant. They correlated 0.48, highly significant. As can be seen from Table 9 the two value measures had very much the same profile of correlations with other variables. An exception is that consummatory value was not, as instrumental value, related to an inhibiting environment.

The picture that emerges is that both values are related to perceived environmental influence and to importance of action - and also to liking and to mood. It is striking that instrumental and consummatory value did not have an antagonistic relationship.

The number of steps utilized in analyzing depth of intention was taken as an indicant of the level of articulation or reflection. Reflection thus appears to be stimulated by (a) perception of environmental influence (b) aversive emotions. It is interesting to note that both instrumental and consummatory value also correlated with articulation, but the interpretation of that finding is less obvious.

DISCUSSION

The present results support our approach of studying the stream of behavior as it occurs. Retrospective reporting assumes the existence of a correct memory of actions. Black and Bower (1979) and Bower *et al.* (1979) showed that one tends to remember goals rather than actions, and odd deviations from routine. If goals are remembered, it may be assumed that these are defined at a more abstract level than the concrete level of action, hence retrospective reports should differ systematically from time sampling in that sense. In an interesting study, Bratfisch (1970) compared yesterday diary reports with subjective impressions of how frequently various activities were carried out. The subjects were unsuccessful students of mathematics and it was found that they grossly overestimated the category "studies" and underestimated sleep and recreation. These results may be connected with an effect of effort and pleasure on time as experienced in retrospect (cf.

Frankenhaeuser, 1959), suggesting that the particular aspect of subjective time needs to be taken into account in the methodological discussion.

Interestingly enough, there is evidence that people have quite veridical memories about frequencies of behavioral acts (Hasher & Zacks, 1984; Borkebau & Osten-dorf, 1987), both regarding their own behavior and that of others (Nisbett & Kunda, 1985), although there are certain biases, such as overestimating the frequency of rare actions and underestimating the frequency of common ones.

We now turn to a discussion of some of our substantial findings. The background variables accounted for only 5-10 percent of the variance of the ratings of the action variables. We conclude from these findings that the present samples of subjects cannot be entirely misleading even if they are not strictly representative of the population. The conclusion is supported by the good correspondence between our data and Klevmarken's national estimates.

A few principles can perhaps, at a first approximation, summarize some of the more interesting findings in other parts of the results. Consider first the general picture which emerges from the group differences.

Unemployed young persons, as well as art students, appeared little attracted to market work. It should be noted that the level of unemployment in Sweden has traditionally been very low, much lower than in most other industrialized nations, and that those who still are not employed may partly be in that predicament out of their own choice. The present data suggest that possibility. On the other hand, market work was not particularly popular in *any* group except among the retired people, where it might serve as a pleasant (and uncommon) change in an otherwise very free and well liked life situation. The rather low evaluation of market work is hard to reconcile with common notions as to the existence of various "needs" connected with work, or with the fact that worry about unemployment is so easily aroused. However, it may be the case that worry about unemployment is most of all worry about economical hardships or fear of developing a need for humiliating assistance from the government, rather than lack of work *per se*.

The finding of a U-shaped relationship between variability of liking and mean liking suggests that there are two quite different types of desirable actions. Some actions are well liked by almost everybody, such as relaxation, enjoying the company of good friends, etc. Other actions are quite well liked by a minority of people while others are neutral or dislike them. Stamp collection, writing a scientific paper or playing the piano are some examples. It seems likely that it is in the realm of desirable actions which give rise to a large dispersion that we find a fruitful approach to the study of interests (cf. Sjöberg, 1984).

Other findings require less comments. It is, on the whole, clear that consummatory activities receive the highest ratings and instrumental activities the lowest ones. This is not to deny that instrumental and consummatory values correlate within groups, of course. It is less clear what to conclude from the wide variation in evaluation of the category repair work and maintenance.

We next consider the more general picture emanating from the whole set of variables. The retired persons acted on their own initiative, felt free and were in a good mood, were little stressed and felt little regret. The unemployed, on the other hand, saw goals as distant, were in a bad mood and perceived little environmental influence on their action. Adult students saw their acts (when it came to main actions) as morally justified but they also felt restrained in performing them. Employed students (and parents) were especially characterized by lack of own initiative in non-main acts and by brief acts of that kind. Art students saw the main act as something dependent on their own initiative and difficult. They had a high stress level in non-main acts, a low mood and distant goals. They tended to analyze their action in many steps. Doctoral students felt they could influence their main acts, but were stressed in non-main activities and in a low mood. Alcoholics, finally, perceived little stress in their main act and high value in non-main activities, activities they liked well.

Comparing the retired and the unemployed, both had few demands on them. But for the unemployed that is a superficial conception. They had goals but the way to reach those goals was blocked for them, hence their low mood, in contrast to the high spirits of the retired persons. Adult students were found to be restrained in their main activity, which was held by them to be morally commendable, while employed students experienced external pressure towards trivial acts of a short duration in non-main activities - probably pressures from family life. The present group of alcoholics were content with their own adherence to moral demands in non-main activities. Both art and Ph.D. students had chosen difficult main activities, generating discontent and stress in non-main activities.

A relationship between life events and mood has been documented by Stone and Neale (1984) and Stone (1987). The pleasant characteristics of family life and leisure could be seen in those data, as well as more aversive aspects of work; cf. Sjöberg's (1985a) results on the aversive properties of economically motivated acts.

Part of these findings can be summarized by means of the structural model, built upon within group correlations, and we shall do so shortly. However, the distinction between main and non-main activities necessitates one observation which is not accounted for by the model. Art students and doctoral students both illustrate groups which have chosen, on their own initiative, a very difficult main activity, carried out in a fairly non-structured manner. Art and science is everywhere and never loses its grip on them. Therefore, little is left by the way of energy and time for "trivialities". Hence the low liking for them.

Further comments can be given on the basis of the model. Environmental demands, either moral or of some other type are detrimental and lead to less liking and less perceived freedom, unless they are adhered to in a voluntary manner. In the latter case, high morality is combined with a high level of perceived freedom.

Action to reach a goal is well liked and leads to a positive mood both directly and *via* liking. Finally, a good mood in itself seems to promote a feeling of freedom.

Kirchler (1984a; 1985) also carried out a time-sampling study of unemployed people and found that mood deteriorated immediately after lay-off, then improved for the next two months and finally declined again. Our group of unemployed persons had been without a job for at least three months. Kirchler furthermore reported that the need for power and affiliation was particularly pronounced in the unemployed, a finding well in line with the present results showing the unemployed to be relatively lonely and also stressing the general need for control.

Although previous work on single acts had suggested that expected consequences are only very weakly related to emotional states (see Sjöberg, *in press*, for a review) the present results give a rather different picture; the relation was found to be quite strong.

The prevalence of instrumentality of actions which was found in the Sjöberg (1981) study was partly replicated here, as well as in an interesting study carried out in Italy by Rattazzi (1985) on aggressive acts. The mean ratings of instrumental, consummatory and environmental orientation of acts at four different levels of depth are given in Figure 4. Instrumental and consummatory orientations are both high, instrumental slightly higher than consummatory at the primary level. Environmental control is throughout on a low level. It was also striking in the present data that there was no conflict between instrumental and consummatory value, but a rather pronounced positive correlation between these two aspects of action. Rattazzi's results suggest, however, that such a correlation is not likely to hold for all types of action.

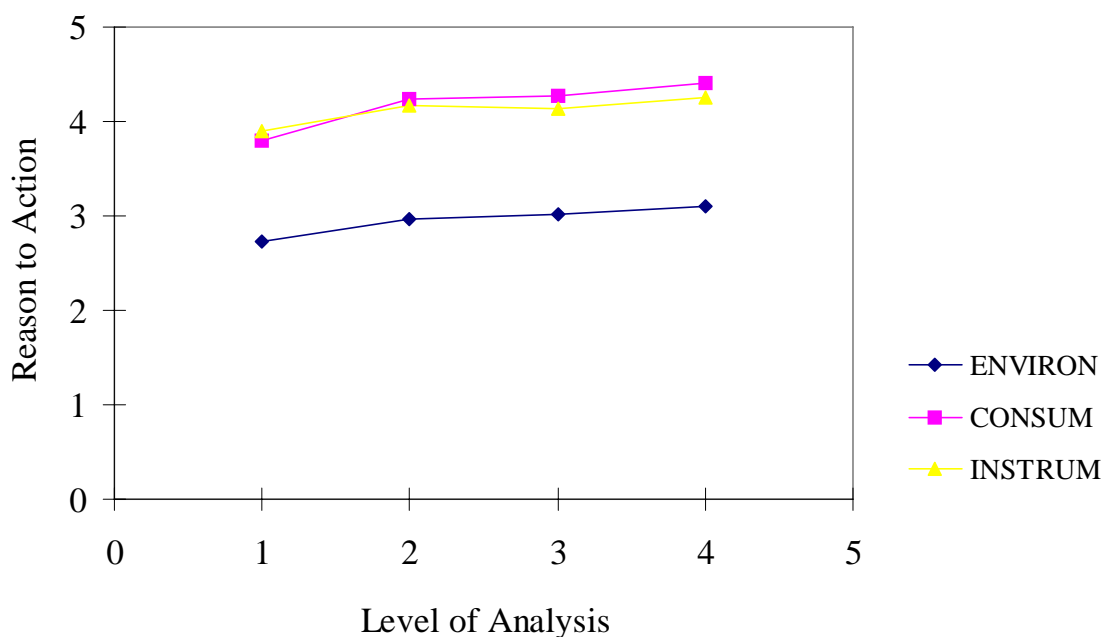


Figure 4. Means of instrumental, consummatory and environmental reasons

for action on each of four levels of explanation.

The analysis of intention in several steps or levels performed in the present study is not common. It is interesting to inquire about the possible further use of such data. Is the number of steps utilized in analyzing intention a reflection of depth of articulation (i.e., the final depth arrived at in the analysis) or is it a reflection of the starting point? It is possible that some persons start at a more concrete level in defining their goals and that they therefore find it easier and more natural to develop it in more steps.

Wegner *et al.* (1984) and Vallacher and Wegner (1987) studied how people conceive of their actions. They suggested that actions are pursued according to how they are conceived. Conceptions of action can, according to them, be at different levels of abstraction. A high level of abstraction is always preferred, but difficulties cause the person to reconsider the action in more concrete terms. They may then be influenced by suggestions about a new high level definition of their action and change it accordingly. Persons who are not skillful in performing an act would therefore be less likely to change their conceptions due to difficulties because they are already at a low level and cannot change their conceptions to a high level in a more definite way; new difficulties arise. In addition, an action may be conceived in a more concrete way when the final goal is coming closer because there is a rising concern with details involved in realizing the goal. Hence, difficult acts and acts close to the goal should be conceived at a more concrete conceptual level. If difficulty causes acts to be conceived at a lower and more concrete level they should be redefined in more steps. Also, more uncommon acts should be conceived at a lower level.

The model proposed by Wegner *et al.* should be relevant also for naturally occurring acts although it has not, to our knowledge, been tested in that case. Note that retrospective reports and time sampling may give results at different levels of abstraction when it comes to reports about acts, since one tends to remember mainly goals, not details of acts.

Econometric models of time allocation should finally be briefly mentioned. Flood (1983), citing Becker (1965), aimed at modeling intra family time allocation between men and women. Here we are only concerned about his assumptions that (a) no two activities can be carried out at the same time and (b) that work activities "do not yield any direct utility" (p. 14). Although the first mentioned assumption is strictly false, we believe that is not unreasonable as an approximation. (In our data, people would only very seldom indicate that they were carrying out two activities at the same time). However, assumption (b) should be viewed in the light of the strong correlation we have found between instrumental and consummatory values of actions. We find the assumption unlikely to be true. Work does have a utility in

its own right and is not only carried out for what it leads to, at least if utility has anything to do with how people feel about what they are doing.

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