Control of Human Behavior, Mental Processes, and Consciousness

Essays in Honor of the 60th Birthday of August Flammer

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Control Psychology Under the Control of Questionnaires? The Search for an Alternative Assessment Procedure[1]

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INTRODUCTION

The concept of control psychology, when it started with the early contributions of J. B. Rotter in the fifties, was strongly related to behavioural theoretical assumptions integrating cognitive constructs such as "expectancies" or "internal versus external locus of control reinforcement." Empirical research on the development of expectancies for internal and external control of reinforcement under natural conditions proved difficult; nevertheless theoretical assumptions dealt with learning of expectations under natural conditions, as did the contribution on social learning theory by Bandura (1973), or Mischel (1973).

The theoretical contributions of Rotter and many others begun later to focus on the concept of *generalized* expectancies and on *individual differences*. All these developments were important and represent a real evolution in psychological theory succinctly described by August Flammer's book "Erfahrung der eigenen Wirksamkeit. Einführung in die Psychologie der Kontrollmeinung" (Flammer, 1990). The rich abundance of control psychology which later followed was for a great part centred around these topics, with exception of the experimental approaches (Averill, 1973; Seligman, 1975).

These latter topics on generalized expectancies, individual differences, and field-specific control beliefs (such as control beliefs concerning health behavior; Lefcourt & Davidson-Katz, 1991) are based on questionnaire data. Questionnaires are an appropriate method for such theoretical questions.

It is interesting to speculate why we know so much about the correlations of generalized control beliefs with other psychological features, and why so little, based on data gathered in concrete daily life situations, about the function of control expectancies as hot cognitions, for behavior regulation in everyday life.

[1]We are indebted to Ian Law for his capable programming work and Regula Berger, Monique Horner and Dominik Schoebi for their precious support.

One possible answer is that in psychology, theoretical topics, which can be treated with questionnaires, attract more empirical attention than topics, such as posed by the early Rotter, which are methodologically more complicated to deal with. As so often in research, not only theoretical assumptions stimulate methodological developments, but methods inspire also theoretical ideas and influence the selection of research topics.

The dominance of questionnaires is clearly reflected in the literature. In the PsycLIT search system we found, for example, under Journal Articles (1974–1997), by combining the following keywords "internal-external-locus of control," and "questionnaire or scale or inventory, but not experiment" 2615 indications. For the combination of "internal-external-locus of control" and "experiment or behavioral assessment" PsycLIT offered 371 articles. About 7 times more publications are based on questionnaire data than on experimental or behavioral assessment data.

The same observation can be made for the development of psychological research in the domain of causal attribution. Causal attribution processes were theoretically considered as cognitive processes which take place under specific conditions and which can influence emotions. The majority of the research focused on questionnaire data is dealing with the cognitive self-representation of the subjects' causal attributions. They rely on indicators of how subjects think they would attribute causalities in hypothetical situations or how they remembered that they attributed causalities in experienced situations with other measures, such as measures on motivation. Alternative approaches are developed e.g., by the group of Scherer (1993) for predicting emotions by attributional and appraisal processes.

In the following, we describe briefly the development of a method, which allows another access to control and attribution related psychological phenomena and which allows new theoretical questions which are difficult to test with traditional questionnaires. Typical trait oriented questionnaires for revealing individual differences, e.g. concerning locus of control, query the subjects' generalised cognitive representation of his of her beliefs, behavior, emotional reaction etc. They usually do not record concrete beliefs in concrete situation, concrete behavior in concrete situation or specific emotions in specific situations, and if they do so, they rely heavily on the subjects' memory. They inform on the subjects representation or belief on how they act, behave etc. Cold and not hot cognitions or emotions are at stake.

DEVELOPMENT OF A COMPUTER-AIDED SELF-MONITORING ASSESSMENT UNDER FIELD CONDITIONS

In order to avoid the impairing effects on validity of usual—and especially of retrospective—self-report data, we need assessment strategies which meet the three following criteria: (A) The procedure should allow assessing positive mood and emotions as well as stressful episodes in daily life and the social and environmental conditions in which these states and events occur. (B) The time lag between the stressful event and its being recorded should be as short as possible, in order to minimise memory distortions. It must be easy to record information when the subjects are still in the state of emotional arousal for storing "hot emotions" and "hot cognitions." (C) The method should assess psychological relevant data, not using a diary free text self description, but structured, according to the theoretical framework.

With this aim we have recently developed a systematic self observation method, based on the use of pocket computers. This approach to psychological data can be seen in the tradition of self recording procedures as developed by the group of Larson and Richards (1994) in the United States or by Brandstätter (1983) in Germany, working with booklets. Pawlik and Buse (1982) or Fahrenberg (1994) are examples of researchers who also worked with pocket computers. The book "Ambulatory Assessment" (Fahrenberg & Myrtek, 1996) gives an overview on the development of these methods in Europe. The assessment procedure, still undergoing refinement, and whose current development we will briefly discuss, is built on the experience of the COMRES (COMputer REcording System), that Perrez and Reicherts (1989, 1992, 1996) developed and evaluated in earlier projects on recording of individual stress experiences and coping with them. The pocket computer is used as an external memory for stress, that is applied directly in stressful, but also in agreeable, situations to record emotions and other information. This allows us to minimise problems of memory and the subjective retrospective distortion. Alongside the computer version, a booklet variant was developed.

What Is Self-Recorded?

Table 15.1 summarises the different information types and item formats assessed by the family-self-monitoring system (FASEM).

Part of this information is recorded at every observation and part depends on previously stored information. For example, the program only asks questions on adaptive reactions (coping responses) if there is a need for adaptation, depending on the answers to preceding questions about mood and emotions (negative mood or emotions, and challenge). Furthermore, the questions on social coping depend on the involvement of other people in the situation. For situations, requiring adaptation without social involvement, only the individual coping items are presented.

TABLE 15.1
FASEM information types and item formats

Information on:	*Item Format*
1. Mood	1 item, 10 degrees
2. Emotions	13 items, 3 degrees
3. Setting and	5 categories
evaluation of the setting	2 categories (familiar to strange)
4. Presence of other persons	11 categories
5. Actual activity	7 categories
Valency of activity	1 item, 4 degrees
6. Concerns of mood and emotions (is physical, psychic, social or economic integrity positively or negatively at stake?)	
Self evaluation	8 categories
If others are involved:	
Evaluation of others	12 categories
Evaluation of interaction	2 categories (with/without conflict)
7. Causal attribution	
Internal or external attribution	4 items, 3 degrees
Other persons	12 items, 3 degrees
8. Control expectation	
by myself or by other persons	12 items, 3 degrees
9. Coping, if there is need for adaptation	
Individual coping	8 items, 3 degrees
Social coping	14 items, 3 degrees
10. Evaluation of the behavior of other persons (if involved)	12 items, 3 degrees

Sampling Method

The system works with a time sampling method supplemented with an event sampling strategy. The events are breakfast, lunch, and dinner, which all subjects have to record. The computer alerts the subject acoustically every two hours to record his current mood and the other information mentioned above. This sampling schedule assures 7 observations per day (3 event- and 4 time-sampling). In

this way we have simultaneous self recording of both members of the couple and their teenage children. This group self-monitoring procedure is done over a 7-day period.

Technical Aspects

The palmtop computer, an HP 200 LX, is about the size and weight of a note pad, 16 x 8.64 x 2.54 cm and 312 grams. Its performance corresponds to that of a desktop computer some 5 years ago. The output device is a monochrome LCD display with a maximum resolution of 600 * 400 points. The input device is a compact, but complete QWERTY keyboard. No mouse or other pointing device is present.

These characteristics make it possible to carry it during everyday activities and allow the immediate entry of information in a structured format. All subjects have been trained in self observation before the observation period.

To minimize the reactivity the questioning should be as brief as possible. For this reason, every reply is immediately recorded and the possibility is not given to correct the data entry. We accept that the user may sometimes make a simple typing mistake. However, our pre-tests showed this to be relatively rare, due to simplicity of the task and the initial user training. It is also impossible that a user misses completely or incorrectly fills in a question, as it sometimes occurs in the booklet version. The computer also allows the questionnaire to be readily personalised for each family, using the individual names of all family members.

For the development of the questionnaire our program separates the questionnaire interpreter from the questionnaire specification. This allows preparation of the questionnaire without any knowledge of computer programming. It also allows easy adaptation to different languages, important in Switzerland, with four official languages. Improvements in display or in user input (for example use of a pointer device if available on later laptops) can also be incorporated without changing the questionnaire specification.

Methodological Characteristics

Using the data of the pilot study (N = 70) with the booklet version *split-half reliability* measures were calculated.

The 49 sampling points were divided into odd and even (Pawlik & Buse, 1996). For each half either the mean for the interval scaled variables or the percentages scores for categorial variables were calculated for each individual. The values from both halves were correlated with one another and evaluated according to Spearman-Brown. To calculate the mean split half reliability for the items belonging to one question, the coefficient were subjected to a Fisher's-Z-transformation. The mean reliability lies between $r = .63$ (estimation of the "correctness" of the behavior of the interaction partner) and $r = .96$ (presence or ab-

sence of other family members). For the mood the split half reliability was r = .93, for the emotion items r = .89.

The split-half reliability calculated over all items was r = .90. This is a meaningful indication of the high reliability of the aggregated values.

The most critical problem of self monitoring as assessment method concerns its possible *reactivity*. It must be clarified whether the question branching leads the subjects, to adapt their protocol behavior to a more comfortable answer modus. Good mood has a shorter answer sequence because the coping questions are not posed.

There is no statistically relevant daily difference to observe over time, in the frequencies of negative, neutral, or positive mood. This indicates that the response style was not influenced over time by the easy option of a shorter questionnaire. For more details see Perrez, Berger and Wilhelm (1998).

With regard to the exactness of the protocol, we can use, as an indicator for the *objectivity*, the inter-subjective agreement, when more than one subjects make at the same observation sampling point, the same statement about objective questions. This is the case, when the person states where they are and who else is present.

For each family member the concordance percentage was calculated with the remaining family members. The means of the concordance percentages for the parents and the adolescents were then calculated separately.

It could be seen that the place, at which the person is found, gives a very high agreement between the family members (parents 96%, adolescents 99%). The agreement with the data about the presence of the other family members is somewhat smaller (parents 87%, adolescents 82%) and much lower when the presence of people who do not belong to the family, are coded (parents 70%, adolescents 65%).

The accurateness of the inter-observer objectivity can be rated as very good, the data about the presence of other people is satisfactory. A more detailed description of these results can be found in Perrez et al. (1998).

Data from 68 subjects of the recent study, who had the computer version, inform on the *accuracy and duration of recording*. The palmtop computer stores automatically the real recording time and the duration of every assessment. This allows strong control on the subject's commitment to their self-observation task. Figure 15.1 shows the distribution of the time lag between the prescribed and the real observation time on the base of the time sampling observation points (four per day; 11:00, 15:00, 17:00, and 21:00 o'clock). About the half of the observations (48%) were executed at the prescribed time (deviation +/- five minutes).

Concerning the *duration* to answer the questions, the mean needed time (average over the intra-individual means) for the short version was 2.96 minutes (SD = 0.95), and for the complete version 5.17 minutes per protocol (SD = 1.98).

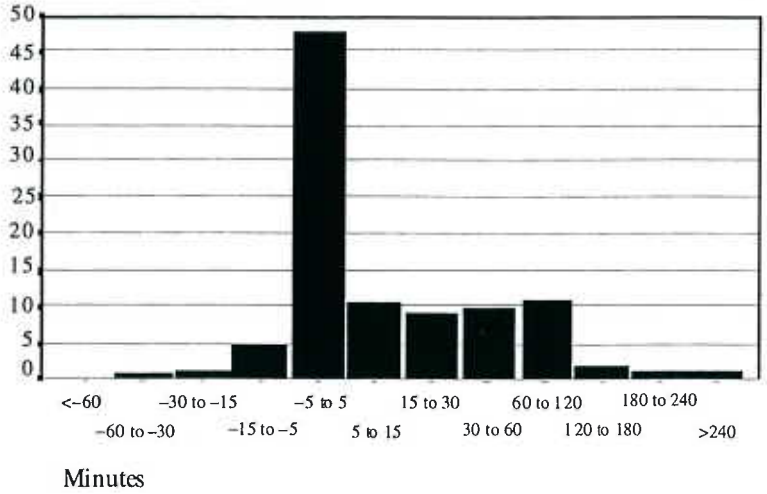

FIG. 15.1. Difference between prescribed and real observation in minutes (N = 68)

SOME FIRST RESULTS ON CONTROL EXPECTANCIES AND CAUSAL ATTRIBUTIONS IN DAILY LIFE OF ADOLESCENTS AND PARENTS

Family Recruiting

For family selection we applied the following criteria: Each family should consist preferable of both parents and at least one adolescent older than 12 years, living together in the same household. We also took care that the self observation took place during a normal family week, and not during the holidays or while moving.

We found through the German- and French-speaking parent associations of the secondary schools of the canton Fribourg, and the town population control, information freely available to the public, 99 families (355 subjects) in total with adolescents, that fulfil the criteria mentioned and accepted to participate in the study. For the final analysis we could work with 339 subjects from 96 families. Thirty-three German speaking families, 50 French-speaking families, and 13 Italian-speaking families: 96 mothers, 81 fathers, 76 sons, and 86 daughters. The mean age of the parents was 45.2 (SD = 4.63), ranging from 32 to 60 years; the mean age of the children was 16.7 (SD = 2.14), ranging 13 to 26 years. One part of the subjects worked with the booklets, the other with the palmtop computers (20 families, n = 68).

Principles Of The Data Analysis

As we asked each of the 339 subjects to give us 49 observations, our row data-matrix consists of 16,611 cases minus a certain level of missing observations, which varied between 3.8% and 7.1% according to the question asked.

For the further analysis, special situations of interest were selected and then the data were aggregated, so that each person was represented once in the new aggregated data matrix. For continuous variables the aggregation function was the mean or the standard deviation, for categorial variables the percentage of occurrence was used. For a discussion of the advantages and drawbacks of aggregated data see Larson & Delespaul (1992).

These aggregated data were then treated as dependent variables in different significance test procedures to examine effects of generation (parents vs. adolescents), of sex and mood state. A detailed description of the data preparation and significance testing is given for each set of hypotheses.

Control Expectancies In Daily Life Situations

According to different studies and reviews, *gender differences* covering generalized control expectancies are not evident (Krampen, 1991). Nearly all available studies refer to locus of control as a generalized control belief and we could not find any study that assessed control expectancies in daily life situations with a self monitoring method.

In order to explore the question of gender differences covering locus of control and other properties (mono-causal and multi-causal expectancies) the data in field situations were analyzed to help answer these questions. A further question concerns the control expectancies as a function of the development, in particular the comparison of adolescents with adults.

Hypotheses about differences between adults and adolescents:

1. For adolescents, the peer group is more important than the family. Therefore their external control expectancies are more often focused on persons outside the immediate family.
2. The external control expectancies of the parents are more directed to other family members.

Operationalization and Data Analysis. When the person's current mood was bad, the question was asked: "who could change the situation in a positive way." If the person answers, that *only* he or she could change the situation, we get an indicator for internal control expectancy. If the person answered that *only* a member of the family or that *only* people outside the nuclear family could change the situation, we get different aspects of external control expectancy. Possible are also mixed control expectancies. This is the case if the person answers at the same time that the situation could be changed by him or herself *and* someone else.

Negative moods were rare events. Only 1,080 situations (6.8%) were reported in which the mood was negative. In 594 (55.0%) events with a negative mood, the person had the expectation that somebody could change the situation. In 409 (37.9%) of the cases, they had no control expectation. 77 answers (7.1%) were missing. The 594 situations with a control expectation were selected, and for each person the percentage of the occurrence of the different types of control expectations were computed. We collected valid data from 218 persons (46 fathers, 61 mothers, 45 sons, 66 daughters) out of 91 families, which were based on different number of situations per person (80 people had one situation, 52 had two, 27 had three and 59 had four or more situations). As the percentage scores did not correspond to the normal distribution, we used the Mann-Witney-U-test to examine the sex differences and the differences between parents and adolescents ($\alpha < .05$; one tailed for explicit hypotheses, two tailed for exploratory purposes).

TABLE 15.2
Differences in the relative frequencies (percent per person) of different control expectancies between females and males

types of control expectancies	*females* (n = 127)		*males* (n = 91)		*M-W-U*
	M	*SD*	*M*	*SD*	*p*-Value
only oneself	12.9	26.3	13.1	28.4	.624
only family members	10.9	25.2	13.4	28.9	.702
only persons outside the family	25.3	38.2	15.6	29.4	.581
self and family members	20.0	31.4	19.9	32.4	.967
self and persons outside the family	18.6	31.5	25.9	38.8	.278

The Mann-Witney-U-test proposes the independence of the sampling units. Because the data stem from family members they are not independent. In general, data from family members are more or less positively correlated with each other. This leads to the consequence that significance tests for independent data tend to be conservative (Rosenthal & Rosnow, 1991). As alternative procedures that treat family members as dependent from each other would also have had disadvantages (e.g. loss of subjects that can not be paired adequately) we took the risk of making too conservative decisions.

Results. As Table 15.2 shows there were no sex differences in any of the control expectancies types.

TABLE 15.3
Differences in the relative frequencies (percent per person) of different control expectancies between parents and adolescents

types of control expectancies	*parents* (n = 107)		*adolescents* (n = 111)		*M-W-U*
	M	*SD*	*M*	*SD*	*p*-Value
only oneself	12.6	23.8	13.4	30.1	.476
only family members (*)	18.9	33.0	5.1	16.4	<.001
only persons outside the family (*)	10.6	26.5	31.6	39.1	<.001
self and family members	31.4	36.9	9.0	20.7	<.001
self and persons outside the family	15.6	29.7	27.4	38.5	.017

(*) The test for these variables was one-tailed.

We find significant results, as predicted, between the two generations. In the parents' perception, other family members or themselves together with other family members, could most often change the situation. Adolescents on the other hand expect, that someone outside the nuclear family or themselves together with a non-family member have most often control over the situation. Concerning the internal control-expectation there is no difference between generations.

Causal Attributions In Daily Life Situations

In the following we describe the procedure and the results concerning the analysis of factors influencing causal attributions: mood, sex, and generation. Here again, the distribution of the data restricts the analysis to nonparametric procedures. Therefore we could not test the influence of the factors simultaneously.

Operationalisation of the Causal Attributions. The subjects were asked at the beginning of every observation about their current mood state. A later question asked: "Who or what is the cause of your situation?" (see Table 15.1) Similar to the control expectancies classification we get an indicator for internal (i.e., self-) attribution, if the person answers, that *only* he or she is the cause for the situation.

If the person answers that *only* a member of the family or that *only* persons outside the nuclear family could change the situation, we get different aspects of external person directed attribution. Possible is also the attribution on impersonal circumstances, (*only* external circumstances, weather or chance, are chosen). We get a general external attribution, if the person attributes to other persons *or* to non-personal circumstances.

The simultaneous use of different attribution types is also quite common. If the person attributes to him- or herself *and* also to other persons *or* external circumstances, we get an indicator for a kind of interactional attribution type.

Hypotheses About Attributions Concerning Different Mood States.

1. Self attributions should be less common concerning negative than concerning positive mood states.
2. External attributions (to external circumstances or to other persons) should be more common concerning negative than concerning positive mood states.

Both reactions are functional to maintain the homeostasis of the self-esteem.

Data analysis. To examine the hypothesis about attributions in different mood states, the data were aggregated under the condition that the mood was good and once again under the condition that the mood was bad. The two files were matched so that the data could be treated with repeated measurement procedures. The data matrix contains 267 subjects (57 fathers, 77 mothers, 61 sons and 72 daughters) out of 93 families, which had at least reported one observation in a negative mood state.

Here again the percentage scores were multimodal distributed. We therefore used the Wilcoxon-test to test our hypothesis (alpha < .05, one-tailed). Beside the variables for which we had hypotheses about, we did an exploratory look on some further attribution-types of interest and on sex and generation differences, using the Mann-Witney-U-test again (alpha < .05, two-tailed).

Results. As figure 15.2 shows, there are significant mood-dependent differences between the attribution types in the predicted direction. Concerning good mood states, self-caused attributions are twice as common as those concerning bad mood states while external attributions are half as frequent. The most frequent type is the attribution to oneself and to external causes at the same time. Here a mood difference also exists that fits the direction of our expectancies: Concerning good mood this kind of attribution is more frequent.

The exploratory analysis of the subgroups of external attribution reveals an interesting pattern. While there is not a substantial mood difference in attributing to external circumstances or people outside the family, the attribution to family members almost only occurs for bad mood states.

On the left side of the gap the three main types of causal attributions are shown. On the right side three subcategories of exclusively external attributions are shown. Differences were tested with the Wilcoxon-test (one-tailed for only self, and only external attributions, two-tailed for the other variables).

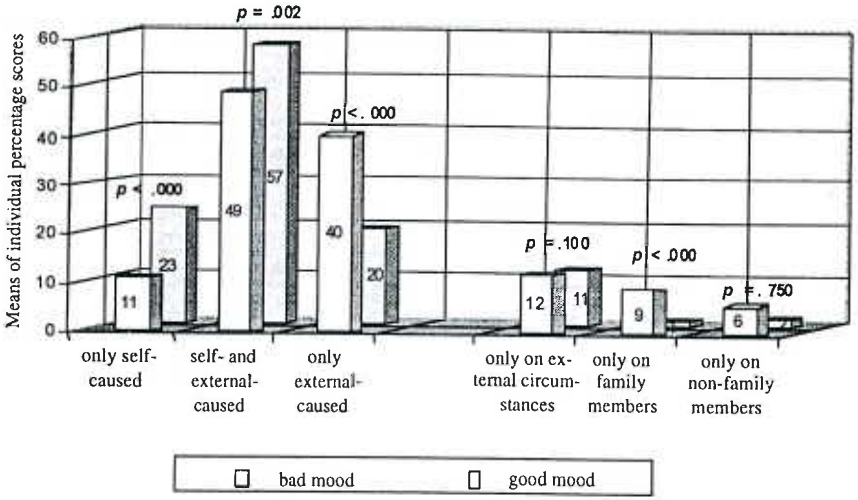

FIG. 15.2. Mean percentage of attribution types concerning bad mood and good mood states (N = 267).

The examination of the generation effects reveals that parents attribute the cause of their bad mood more often to external sources and less often to themselves than adolescents do. Parents also attribute more often to other family members, both for bad mood and for good mood. (Table 15.4). For positive mood states adolescents are more likely to attribute these to external circumstances than to parents.

Hypotheses About The Effects Of Specific Attributions On The Change Of Negative Mood

Because external attributions with respect to negative mood are more likely to maintain the self-esteem, they should be more prone to change the mood in a positive direction than internal attributions.

1. We predict as a short-term-effect that positive mood swing between the previous observation x0 and the following observation x1 will be larger, if the subject reports at observation x0 external attributions, and it will be lower, if it reports an internal attribution.

Data Analysis. To test the short-term effect on mood regulation the mood of observation, x0 was subtracted from the mood at observation x1 (under the condition that both observations were made at the same day). First, all situations with a bad mood and only external attributions at observation x0 were selected and than aggregated. Second, all situations with a bad mood and only internal attributions at observation x0 were selected and also aggregated. After matching

the two files together, 32 subjects (7 fathers, 4 mothers, 11 sons, and 10 daughters) out of 27 families were left, who had at least one pure external and one pure internal attribution concerning a negative mood. As these data were approximately normal distributed, the mood difference could be analyzed with a t-test for paired samples (one-tailed, alpha < .05).

TABLE 15.4
Differences between parents (n = 134) and adolescents (n = 133) in the use of causal attributions concerning bad and concerning good mood states

Causal attributions	*for bad mood*			*for good mood*		
	parents *M*	adoles *M*	M-W-U *p*-val.	parents *M*	adoles *M*	M-W-U *p*-val.
self-caused	8.7	13.0	.032	22.0	23.3	.865
self- and external caused	45.1	53.2	.140	58.8	54.7	.192
only external caused	46.2	33.7	.023	19.2	22.0	.233
only external circumstances	13.4	10.7	.629	10.4	13.1	.025
only family members	11.7	6.7	.016	1.9	0.8	.010
only non family members	5.5	5.9	.642	1.9	1.9	.948

We didn't find significant and substantial sex differences in the use of causal attributions.

Results. The intrapersonal comparison shows - matching our prediction - that after external attributions the positive mood change is significantly larger than after internal attributions (internal: $M = 2.6$, $SD = 1.6$; external: $M = 3.3$, $SD = 1.4$; $p = .020$, one-tailed). One may doubt that this result is due to differences in the mood state at observation x0. We checked that also with a t-test for paired samples. No mood difference could be found. This result clearly supports our hypothesis.

CONCLUSION

We consider, on the basis of the current trial, that this method provides reliable and useful data on self observed cognitive, emotional, and social processes. Nevertheless, different problems are inherent to this approach which limit its methodological power. The main methodical problem, that this method has to take into account, is that of *reactivity*. Just as the data of retrospective are liable to be impaired by memory distortions, here, the important question is how far the observed behavior is changed by the observation method. This reactivity could prevent the collection of reliable and useful data. Stern (1986) could show for the method developed by Pawlik and Buse that the behavior reactivity can be strongly observed, when only a single behavior type is studied in isolation rather than several, and when people find themselves in unfamiliar surroundings rather than when they find themselves in a habitual setting. Our observation setting is above all the familiar surrounding of the family and professional life and several behavioral types are simultaneously observed, and therefore the reactivity should be limited in this method. This interpretation is supported by the data for certain reactivity aspects which we have discussed above. (For a more detailed discussion of the reactivity problem, we refer to Perrez, Horner & Morval, submitted).

A second problem concerns the *limited information on objective properties* of the situations in which subjects are involved while storing their covert and overt behaviour. For some aspects of situations this problem may be less important, e.g., for the setting or for the presence or absence of other people. For the analysis of coping with stressful situations, information on objective properties of stressors would be important. A third problem consists of the question, if the *sample* of stored behavior is *representative* for the person. One week is a long self observation period, but for certain questions it may be too short for assuring representative data of the subjects' experience and behaviour.

We have found that the *acceptance of the method*, using computer aided self recording, to be surprisingly high. After the data collection, all the co-operating subjects fill in, a questionnaire to estimate their experience with the investigation. We pose the question: "What, in your opinion, is the ideal length of the self observation?" Seventy percent answered that one week or more would be the ideal duration. Only a minority of 30% pleads for a shorter observation time. This method of data collection, however, demanded an appropriate coaching of the participating subjects.

We described above some results on control expectancies and causal attributions assessed with FASEM in everyday life. On the basis of the data from self observation of daily life experiences, the results on locus of control expectancies by adolescents confirm, for example, the hypothesis, that peers are expected to be more helpful for aid with personal problems than parents or other family members. This finding is in accordance with results of other studies, for example those, that deal with the decreasing importance of parents as supporting partners in stressful situations. Fend (1990) observed in a longitudinal study of 1,790 adolescents a continuous decrease of the adolescents' preference to address themselves to their parents for personal or social problems over the 12- to 16-year-old period.

Concerning causal attributions, we compared different types with reference to mood states, gender and generation. The self evaluation maintenance may in general favor internal causal attributions for bad mood (Tesser, Pilkington & MacIntosh, 1989). The general tendencies seem to be mediated by social, respectively generation influences.

These examples of results are based on systematic self observation of concrete experiences in daily life. They do not reflect generalized cognitions (such as locus of control tendencies or causal attribution tendencies) and possible connections of such cognitions with other properties of the subjects. They therefore provide a new means of access to properties of the behavioral stream.

With reference to the question posed in the introduction, self-monitoring under natural conditions opens new and complementary theoretical perspectives for the psychology of control and causal attribution. The described assessment procedure can help to answer questions on the specificity of behaviour in every day life, questions on behavior consistency (Pawlik & Buse, 1996), questions on short-term and on mid-term effects on emotional reactions and well being of different types of appraisal processes etc. Furthermore, this assessment procedure allows analyzing dynamic aspects of behavior such as questions on periodicity of mood over time. It permits new possibilities in analysing social interactions, as Larson and Richards (1994) have already demonstrated. It opens new theoretical perspectives for predicting behavior under natural conditions, taking into account proximal variables like hot emotions, hot cognitions, behavioral, and setting variables.

REFERENCES

Averill, J. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin, 80,* 286–303.

Bandura, A. (1973). *Aggression: A social learning analysis.* Engle-Wood Cliffs, NJ: Prentice Hall.

Brandstätter, H. (1983). Emotional responses to other persons in every day life situations. *Journal of Personality and Social Psychology, 45,* 871–883.

Dalbert, C. (1992). Subjektives Wohlbefinden junger Erwachsener: Theoretische und empirische Analysen der Struktur und Stabilität. *Zeitschrift für Differentielle und Diagnostische Psychologie, 4,* 207–220.

Fahrenberg, J. (1994). Ambulantes Assessment. Computerunterstützte Datenerfassung unter Alltagsbedingungen. *Diagnostica, 40,* 3, 195–216.

Fahrenberg, J. & Myrtek, M. (Eds.). (1996). *Ambulatory assessment. Computer-assisted psychological and psychophysiological methods in monitoring and field studies.* Seattle/Toronto: Hogrefe & Huber.

Fend, H. (1990). *Vom Kind zum Jugendlichen. Bd. 1.* Bern: Huber.

Flammer, A. (1990). *Erfahrung der eigenen Wirksamkeit. Einführung in die Psychologie der Kontrollmeinung*. Bern: Huber.

Krampen, G. (1991). *Fragebogen zu Kompetenz- und Kontrollüberzeugungen (FKK)*. Göttingen: Hogrefe.

Larson, R. & Delespaul, P. A. E. G. (1992). Analyzing experience sampling data: A guide book for the perplexed. In M.W. de Vries (Ed.), *The experience of psychopathology: Investigating mental disorders in their natural settings*. Cambridge, MA: Cambridge University Press.

Larson, R. & Richards, M. (1994). *Divergent realities. The emotional lives of mothers, fathers, and adolescents*. New York: Basic Books.

Lefcourt, H. M. & Davidson-Katz, K. (1991). Locus of control and health. In C. R. Snyder & D. R. Forsyth (Eds.), *Handbook of Social and Clinical Psychology* (pp. 246-266). New York: Pergamon.

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review, 80*, 252–283.

Pawlik, K. & Buse, L. (1982). Rechnergestützte Verhaltensregistrierung: Beschreibung und erste psychometrische Überprüfung einer neuen Erhebungsmethode. *Zeit-schrift für Differentielle und Diagnostische Psychologie, 3*, 101–118.

Pawlik, K. & Buse, L. (1996). Verhaltenbeobachtung im Labor und Feld. In K. Pawlik (Hrsg.), *Grundlagen und Methoden der Differentiellen Psychologie. Enzyklopädie der Psychologie. Bd. C/VIII/1*. Göttingen: Hogrefe

Perrez, M. & Reicherts, M. (1989). Belastungsverarbeitung: Computerunterstützte Selbstbeobachtung im Feld. *Zeitschrift für Differentielle und Diagnostische Psychologie, 10*, 2, 129–139.

Perrez, M. & Reicherts, M. (1992). *Stress, coping, and health: A situational-behavior approach. Theory, methods, applications*. Seattle; Toronto; Bern; Göttingen: Hogrefe & Huber.

Perrez, M. & Reicherts, M. (1996). A computer-assisted self-monitoring procedure for assessing stress-related behavior under real life conditions. In J. Fahrenberg & M. Myrtek (Eds.), *Ambulatory Assessment. Computer-assisted psychological and psychophysiological methods in monitoring and field studies* (pp. 51–71). Seattle; Toronto: Hogrefe & Huber.

Perrez, M., Berger, R. & Wilhelm, P. (1998). Die Erfassung von Belastungserleben und Belastungsverarbeitung in der Familie: Self-Monitoring als neuer Ansatz. *Psychologie in Erziehung und Unterricht, 45*, 19–35.

Perrez, M., Horner, M. & Morval, M. (submitted). Comment mesurer le stress: Une nouvelle approche: l'auto-observation systématique au moyen d'un ordinateur de poche.

Rosenthal, R. & Rosnow, R. L. (1991). *Essentials of behavioral research. Methods and data analysis (2nd ed.)*. New York: McGraw-Hill.

Scherer, K. R. (1993). Studying the emotion-antecedent appraisal process: An expert system approach. *Cognition and Emotion, 7*, 325–355.

Seligman, M. E. P. (1975). *Helplessness. On depression, development and death*. San Francisco: Freeman.

Stern, E. (1986). *Reaktivitätseffekt in Untersuchungen zur Selbstprotokollierung des Verhaltens im Feld*. Phil. Diss., Universität Hamburg. Frankfurt: Lang.

Tesser, A., Pilkington, C. J. & McIntosh, W. D. (1989). Self-evaluation maintenance and the mediational role of emotions: The perception of friends and strangers. *Journal of Personality and Social Psychology, 57*, 442–456.