

Audiovisual Self-Confrontation in Schizophrenia

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Summary. Only rarely have the effects of audiovisual self-confrontation on psychiatric patients been investigated experimentally and there are few specific hypotheses about the precise effects. Since we hypothesized that the method could have an effect on schizophrenic ego disturbances eight items were used to investigate these disturbances in a carefully selected single case. In contrast to group comparison studies, we used a single case analysis to register subtle individual changes.

The ego disturbances of the patient underwent changes during the sessions which were represented in some fields by an increase, in others by a decrease (1% level). The fact that confrontation sessions differed significantly from interviews supported our hypothesis that ego disturbances can be influenced through audiovisual self-confrontation. In cases of acute anxiety symptoms, the danger of the increasing ego disturbance must be anticipated. For this reason, the use of self-confrontation in these cases should be avoided.

Our study shows, however, that a patient in the early stages of recovery can increase his ego strength through self-confrontation. Herein lies the possibility of integrating this technique into rehabilitation programs.

Key words: Schizophrenia – Effects of audiovisual self-confrontation – Ego disturbance – Single case design.

Zusammenfassung. Die Wirkungsweise der audiovisuellen Selbstkonfrontation bei psychiatrischen Patienten ist bisher wenig experimentell untersucht worden. Über die Art des Effektes der Videokonfrontation besteht ein Mangel an spezifischen Hypothesen. Wir stellten die Hypothese auf, daß diese Methode eine Einflußnahme auf schizophrene Ich-Störungen ermögliche; Ich-Störungen operationalisierten wir mit acht Items und überprüften sie an einem sorg-

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fällig ausgewählten Einzelfall. Im Gegensatz zu einem gruppenstatistischen Ansatz führten wir eine Einzelfallvarianzanalyse, die subtile individuelle Schwankungen zu registrieren vermag, durch.

Die schizophrenen Ich-Störungen wurden beeinflusst, in einigen Aspekten kurzzeitig verschlechtert und in anderen Bereichen im Laufe der Sitzungen verbessert (1%-Niveau). Darüber hinaus zeigte die Konfrontation gegenüber der einfachen Interviewaufnahme eine signifikant stärkere Beeinflussung der Ich-Störungen, wodurch unsere Hypothese gestützt werden konnte.

Im Fall einer akuten und ängstlichen Symptomatik würde jedoch die Gefahr einer Verstärkung der Ich-Störungen bestehen, hier wäre die Selbstkonfrontation nicht indiziert. Unser Beispiel zeigt jedoch, daß im Stadium der beginnenden Remission durch audiovisuelle Selbstkonfrontation eine größere Ich-Stärke erreicht werden kann. Hierin liegt die Chance, das Verfahren in einen rehabilitativen Therapieplan zu integrieren.

Schlüsselwörter: Schizophrenie – Audiovisuelle Selbstkonfrontation – Ich-Störungen – Einzelfallexperiment.

Introduction

Videotechnical methods have been used in psychiatry for over ten years. Surveys of these methods have been published by Danet (1968); Bailey and Sowder (1970); Berger (1978); and Helmchen and Renfordt (1978). One of the less commonly used methods is audiovisual self-confrontation which involves the exposure of the patient to his immediate self-image while involved in discourse. Such a direct confrontation with one's self-image awakens a high degree of self-interest in some patients. Various authors have tried to make use of this phenomenon in their therapy (Danet, 1968; Griffith, 1974; Braucht, 1970; Bahnson, 1969).

As Bailey and Sowder (1970) summarize, such a confrontation with one's self promotes insight and self-awareness and leads to a realistic confrontation with self-contradictions, an enhanced ego involvement and, ultimately, to a more objective and realistic self-evaluation.

This method was often used in an unsystematic way and led to judgments made primarily by observation rather than by methodological research, judgments which are frequently found in psychotherapy and criticized for methodological reasons, as summarized by Petermann (1977). In recent years some investigations of a more experimental nature have been carried out, however. Thus Griffith and Hinkson (1973) were able to show that significant improvements in patients' self-assessments of their social ease, as measured by the Osgood scales, could be achieved by audiovisual self-confrontation. This improvement, however, could no longer be assessed after two weeks. Moore et al. (1965) played back interviews to 80 psychiatric inpatients and found a significant improvement between the 40 patients who saw themselves on the television screen and the 40 patients who did not. Braucht (1970) examined psychiatric patients who rated themselves after a self-confrontation session. The accuracy of their self-concept increased markedly in comparison to the control patients. Griffith and Gil-

lingham (1978) set up an experimental group with patients with quite different diagnoses. The scales used were SAD (social avoidance and distress) and FNE (fear of negative evaluation), both of which were devised by Watson and Friend (1969). They also used the McNair and Lorr (1964) mood adjective check list. Patients' self-ratings indicated that videotape feedback had immediate effects on self-assessments of social ease and physical attractiveness. Feedback also tended to make patients rate themselves as less attractive in the eyes of other people (Griffith and Gillingham, 1978). The effects obtained cannot, however, be considered specific to self-confrontation. In view of the conclusions of the above-mentioned authors, one can make the criticism that there is a notable lack of specific hypotheses about the precise effects of videotape confrontation. In addition to methodological short-comings, this explains the present lack of clarity about the effects of audiovisual self-confrontation on psychiatric patients.

Formulation of the Questions

In an attempt to monitor the video-effect, psychological questionnaires such as MMPI, FNE and SAD are frequently used. Such questionnaires are intended to measure personality characteristics and possible psychopathologic deviations. Moreover, the basic concept of these questionnaires is that of time stability; they are thus less suitable for registering individual changes. It is not possible to compensate for this deficiency even by using a wider range of such tests. Changes specific to a particular situation must be observed to evaluate the effect of video confrontation. When patients complete self-estimation questionnaires themselves (Braucht, 1970; Griffith and Hinkson, 1973; Danet, 1968), it is often difficult to keep track of influences such as social desirability or position effects in scaling (Schönpflug, 1969). These methodological problems are particularly evident when examining schizophrenic patients. Further difficulties consist in large inter-subject variability, the homogeneity of test groups, and impaired understanding of test instructions (Hartwich, 1978). In the case of a group investigation, there is the additional danger that particular individual changes might cancel out one another.

We consider the current lack of specific hypotheses about the effects of audiovisual self-confrontation a serious shortcoming. As the historical development of psychopathology shows, the problem of formulating hypotheses has played a crucial role. The inductive formulation of hypotheses in psychiatric research has until now been successful in typical single case observations. In such idiographic studies, new insights are gained paradigmatically, and they give rise to the discovery of generalizations (Feldmann, 1974).

The common criticism that single case investigations are unscientific as compared to group studies has recently been countered by Herson and Barlow (1976) who, in the tradition of Allport (1962), Cattell (1966), Chassan (1967), and Shapiro (1966), give examples of a series of single case experimental designs founded on a sound statistical basis. In addition, there is a synopsis on monitored single case studies in Huber (1978).

Formulation of Hypotheses and Proposal of Items

Our experience with audiovisual self-confrontation shows that this method leads to a more intense confrontation, also in states of psychoses. We hypothesize that self-confrontation in schizophrenics has an effect on ego disturbances. Since this concept can be interpreted broadly, only its operationalized application follows:

1. *Ego Boundary (Ich-Demarkation)*

According to Scharfetter (1976), we are aware of ourselves and thus also aware of what we are not. We differentiate between ego and nonego, and in this differentiation we determine what belongs to the ego and what approaches us from the nonego. Ego demarcation is closely connected with the function of what is known as reality control.

Here ego demarcation seems to be established on external grounds; however, the boundaries with the unconscious cannot be so clearly established. The more general hypotheses of influencing ego disturbances would lead, in this particular case, to the subhypothesis that audiovisual self-confrontation can change the ego boundary. This can be tested with the help of the following items, which are rated by means of a seven point rating scale, the lowest number reflecting a healthy condition, the higher indicating illness:

- 1.1. How well does the patient separate fantasy and reality: very clearly—very unclearly?
- 1.2. How does he experience his environment: not at all frightening—very frightening?
- 1.3. How does he feel with regard to external influences: very secure—very unprotected?

2. *Ego Dissociation (Ich-Spaltung)*

E. Bleuler's (1911) notion of a 'dissociation' of otherwise integrated psychic processes was observed as consisting of characteristic schizophrenic disturbances. M. Bleuler (1972) defines 'dissociation' as a lack of unity and as a splitting of individual psychic processes. Following Bleuler's definition, Benedetti (1973) interpreted the loss of unity of the ego as a split of divergent intentions, thoughts, and attitudes which all coexist for the patient who is unaware of the inherent contradictions. The following two items are intended to establish to what extent dependent psychic processes from various areas are no longer experienced as a unity (seven point rating scale):

- 2.1. How does he experience affect and thoughts: unified—split?
- 2.2. How does he experience his own feelings: unified—split?

3. *Ego Activity (Ich-Aktivität)*

Ego activity refers to the mild degrees to which the patient's intention in thoughts, feelings, perception, and psychomotor performance are disturbed, inhibited, restrained, and retarded (Scharfetter, 1976), thereby making petty

everyday decisions, activities, and speech difficult. We examined this field under the following items (seven point rating scale):

- 3.1. Facial expression: lively—stern, stereotype.
- 3.2. Speech activity: well modulated, fluent—monotonous, staccato.
- 3.3. Search for adequate expressions: very sure—very uncertain.

We can test our hypothesis of change in ego disturbance in these operationalised areas. If one were to employ video confrontation with schizophrenics in an acute stage, it could provoke an increase in the disturbance (Danet, 1968; Griffith and Gillingham, 1978). For this reason the hypothesis is checked by investigating ego disturbance decrease. This is best undertaken with patients in the early stages of recovery.

The Subject

A 41-year-old electrical engineer was admitted to the clinic after an acute relapse with paranoid hallucinatory symptoms. He had been ill twice for some months over a period of nine years. This time he was suffering from anxiety caused by key signals which appeared with increasing frequency. He saw and heard 'electric signals' which forced him to certain actions, and he felt that other people already knew what he was thinking. After treatment with neuroleptics, a partial improvement was evident. While suffering from dissociation of feelings and thoughts, he attempted to reestablish contact with reality with the aid of conversation partners. He was very anxious to formulate his past experiences and his present situation in conversation and constantly searched for new and more exact modes of expression and description.

Experiment

The patient was examined five times at weekly intervals. In the first session a 20 min interview was videotaped, the face of the patient being visible on the screen. In the second week there was another interview, followed by a confrontation with the recorded interview of the previous week, during which the patient was once more recorded by means of a second video recorder. In the following two weeks the order was reversed (i.e., first, confrontation with the interview of the week before, succeeded by another 20 min interview). In the final session the order was reversed again (Fig. 1).

The patient's psychotic experiences provided the topic of the interview, and he was constantly encouraged to describe and come to terms with them. In addition, we tried to guide the conversation so that the patient also spoke about matters in our rating items. In the self-confrontation sessions parts of the interviews were played back with breaks at 2–3 min intervals. The patient's picture remained on the screen as a focal point for self-confrontation. The usual interaction between patient and therapist was redirected toward the audiovisual self-image, i.e., the patient was confronted by and had to deal with his own self-image. This procedure was recorded, in turn, by a second camera.

Four films of interviews and four of self-confrontation sessions were used for the evaluation. Ten–1 min sequences were assessed to rate the eight items. Thus, we measured each of the eight items ten times. The data were rated by two independent observers, each rater producing a total of 80 ratings for each single item, i.e., a total of 640 ratings per rater in the course of eight sessions. The interrater-reliability was calculated using the product-moment correlation coefficient as in Overall and Gorham (1962). We consider this coefficient to be more suited to our single case design than the precision measure or the percentage calculation of conformity used by Mombour et al. (1976) and Woggon et al. (1978) in their group comparison designs.

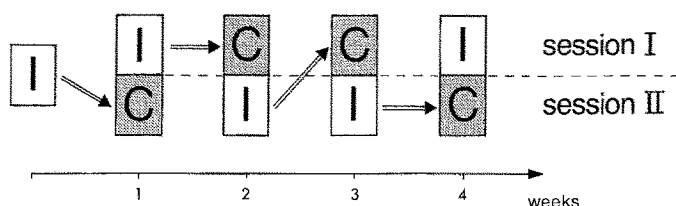


Fig. 1. The order of patients' examination of interviews (I) and self-confrontations (C)

Table 1. Correlation coefficients of the two independent observers for each single item

Item	1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3
<i>r</i>	0.76	0.72	0.78	0.82	0.79	0.72	0.75	0.76

Table 2. Four-dimensional analysis of variance for single subject design

Source	SS	<i>df</i>	MS	F	
A	3 148.48	9	349.83	—	Eta = 0.502
SD	—	—	175.56	—	—
B	43 393.55	3	14464.52	111.17	1%
C	5 364.96	7	766.42	5.89	5%
D	1 012.54	1	1012.54	7.78	5%
AB	2962.30	27	109.71	—	—
AC	1 204.96	63	19.13	—	—
AD	667.54	9	74.17	—	—
BC	4 041.76	21	192.46	—	—
BD	2 849.49	3	949.83	7.30	5%
CD	1 362.15	7	194.59	—	—
ABC	5 143.01	189	27.21	—	—
ABD	2 328.24	27	86.23	—	—
ACD	1 354.65	63	21.50	—	—
BCD	1 939.57	21	92.36	—	—
ABCD	4 698.32	189	24.86	—	—
E'	650.59	5	130.12	—	—

The high interrater-reliability, significant at the 1% level (see Table 1), enables the combination of the rater data pairs, and we were able to make the calculations with the resulting values.

Results

An analysis of variance for single subject designs was originally developed by Shine and Bower (1971). We used an $A \times B \times C \times D$ model based on Shine's (1973) further 'multi-way' development of this design, a summary of which is to

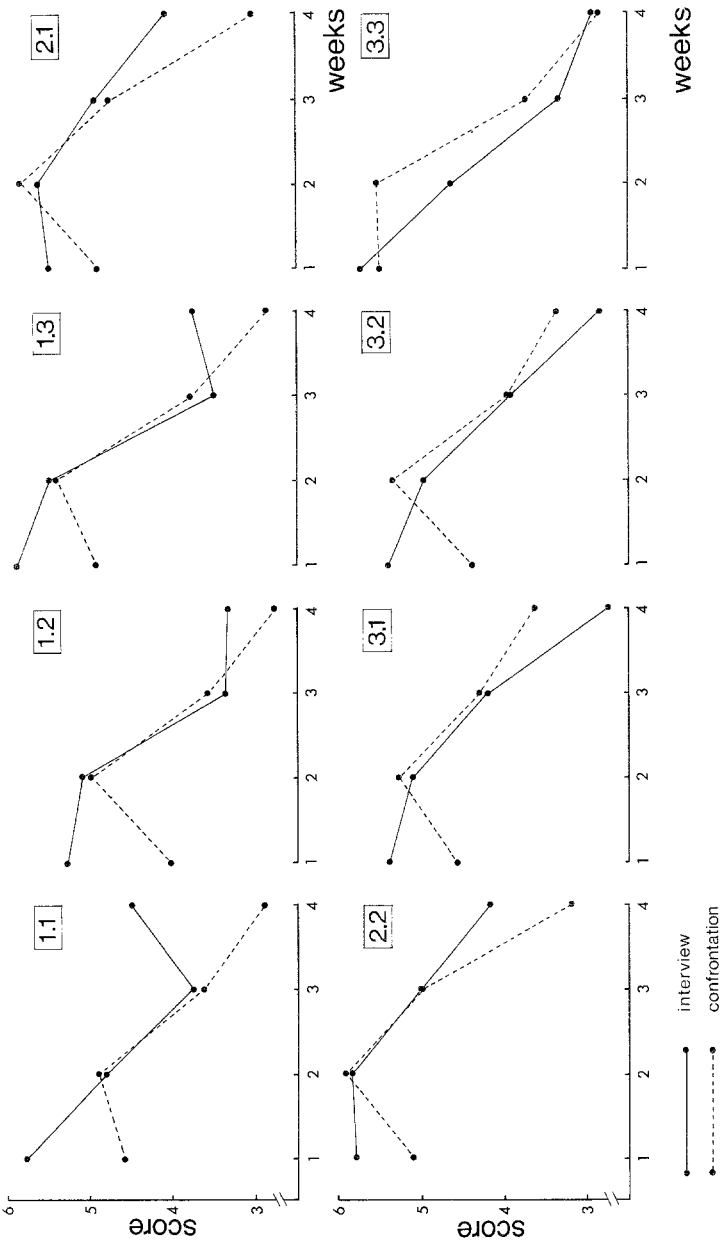


Fig. 2. The varying distribution of the item scores on the weekly sessions

Table 3. Simple effects (Kirk)

Source	SS	F	
D at B ₁	2805.63	21.56	1%
D at B ₂	170.16	1.31	—
D at B ₃	26.63	0.20	—
D at B ₄	859.63	6.61	5%

be found in Bortz (1977). The factor A (trial factor) represents the replication of measurements per session. It is possible to test with this factor whether treatment effects B, C, and D can be interpreted. By calculating the eta term from factor A ($\eta = 0.5$, with the critical value of 0.75 at the 1% level, Bennett and Franklin, 1961), the condition is fulfilled. Factor B₍₁₋₄₎, with four treatments, represents the four double sessions (confrontation and interview). Factor C₍₁₋₈₎, with eight treatments, represents the eight items; factor D, with two treatments, represents the interviews (D₁) vs filming of the confrontation (D₂).

Factor B is significant at the 1% level, i.e., all items differed in each session, since the ego disturbance decreases in the course of the sessions. Factor C is significant at the 5% level, i.e., the items differ with regard to all sessions. Factor D is also significant at the 5% level, i.e., confrontation differs from the interview. In the confrontation sessions the ego disturbance items are assessed more positively. However, the interaction of B \times D at the 5% level is significant, which leads to the following limitation of main effects B and D; factor D, interview and confrontation, is not significant for sessions B₂ and B₃ (see Table 3, simple effects). The significant main effect occurs in sessions B₁ and B₄, however. The limitation resulting from the B \times D interaction does not relate to factor B.

The varying distribution of the effects on the single B sessions are very similar to the three fields of ego disturbance (see Fig. 2). When the initial high level of ego disturbance continues into the session 2 a decrease can be seen in sessions 3 and 4. The confrontation sessions, in contrast to the interview situations, show a clear ego weakening with respect to the items of the ego boundary, ego dissociation, and ego activation in session 2. However, the ego disturbance declines to a level considerably lower than the initial one in sessions 3 and 4.

Discussion

Up to now the methods used have proved insufficient in providing a precise answer to the question of whether audiovisual self-confrontation can have therapeutic effects on psychiatric patients (Griffith and Gillingham, 1978). In particular, there are few specific hypotheses about the nature of the effects. Group comparison designs with relatively unspecific tests have dealt with only one or two confrontation sessions and have been unable to reveal any convincing results from audiovisual therapy (Braucht, 1970; Griffith and Hinkson, 1973; Venardos and Harris, 1973; Griffith and Gillingham, 1978).

Our single case experimental design involving a schizophrenic patient tested whether psychotic ego disturbance could be influenced by audiovisual self-confrontation. To do this, it is necessary to operationalize (items) and register in a technical (audiovisual) and methodological (rating scales) way single fields of ego disturbance in which our experience indicates changes might be effected.

Ego boundary, ego dissociation, and ego activation represent essential fields of schizophrenic ego disturbance, now made more easily observable by the definition of our items. In the course of the audiovisual investigation (interview and confrontation), a clear decline in ego disturbance in all items could be seen (see graphic representation).

The clinically observable improvements of the patient's symptoms are paralleled by the changes we tested. In addition to treatment with neuroleptics, video confrontation was used as the time factor, and further conventional methods, a means of achieving further improvement. Consequently, ego disturbance improvements established by factor B cannot be interpreted as a specific effect of audiovisual methods.

In order to test the efficacy of video confrontation, we developed a special method and applied it to our single case investigation. In each double session, filmed interviews and confrontations, the sequence of which were systematically varied (see Fig. 1), were compared. A significant change with regard to all items was established between the two conditions. In the case of self-confrontation, in contrast to the interview, a significant decrease in ego disturbance was observed (see Fig. 2). However, the difference between the two conditions was confined to sessions 1 and 4. Sessions 2 and 3 proved nonsignificant which may be due to the fact that in these sessions the filmed confrontations came before the interviews and the confrontation effect may have positively influenced the subsequent interview.

The following result also supports our hypothesis: An increase in ego disturbance occurs after the first video session with self-confrontation (Fig. 2). Ego disturbance decreases only in the third and later sessions.

We selected a patient for our single case experiment who, we assumed from experience, would not show an aggravation of symptoms as a result of our method. But even here a brief increase in ego weakness was provoked. This observation shows that it is unsatisfactory to base an investigation on merely two sessions (Griffith and Hinkson, 1973) or to suppose that this method may have a totally negative effect on psychiatrically ill patients.

The brief increase of ego disturbance in the second confrontation session shows that the method initially can prove a strain because intrapsychic adjustment to one's own illness is set in motion. The question of the patient's ego strength seems to be an important indication as to whether or not this method should be used.

Our study showed that a particular degree of ego strength must exist to enable a positive adjustment to self-confrontation. As our example shows, the patient ought to be well motivated and have already begun to deal with his psychotic experiences in a positive fashion. At this stage the audiovisual method can be a valuable aid to therapy in general.

Systematic self-confrontation supports ego strength in the following fields:

1. Ego boundaries are improved. Perception of reality is also improved since the patient is able to compare his psychotic experiences with the 'audiovisual reality' which enables self-criticism and a demarcation from frightening influences.
2. Ego dissociation: The contradiction between thought and affectivity is made more clear and concrete by the confrontation. Similarly, lack of unity in some areas of feeling becomes clearer to the patient.
3. Ego activity: When the patient is ill, he feels inhibited and unsure in the use of facial expressions, the flow of speech, and in the search for more precise verbalization. 'I don't speak as fluently as I used to', he remarks disappointedly at the beginning of the sessions and is thereby able to improve this deficiency in the subsequent self-confrontations.

Our single case design confirmed the initial hypothesis that audiovisual confrontation does have an influence on schizophrenic ego disturbance. Interaction with the audiovisual self gives the patient a new possibility to look at his own ego disturbance more objectively. This therapeutic aid improves ego strength. A generalization of the results of our single case study is limited, however, to psychoses of a similar nature. Further work is therefore necessary before these results can be transferred to other groups of schizophrenics.

References

- Allport, G. W.: The general and the unique in psychological science. *J. Personal.* **30**, 405—422 (1962)
- Bahnson, C. B.: Body and self-images associated with audio-visual self-confrontation. *J. Nerv. Ment. Dis.* **148**, 262—280 (1969)
- Bailey, K. G., Sowder, W. T.: Audiotape and videotape self-confrontation in psychotherapy. *Psychol. Bull.* **74**, 127—137 (1970)
- Benedetti, G.: Schizophrenie. In: *Lexikon der Psychiatrie*, Chr. Müller (ed.). Berlin-Heidelberg-New York: Springer 1973
- Bennett, C. A., Franklin, N. L.: *Statistical analysis in chemistry and the chemical industry*. New York: Wiley 1961
- Berger, M. (ed.): *Videotape techniques in psychiatric training and treatment*. New York: Brunner and Mazel 1978
- Bleuler, E.: *Lehrbuch der Psychiatrie*, M. Bleuler (ed.), 12. Aufl. Berlin-Heidelberg-New York: Springer 1972
- Bodin, A. M.: Videotape applications in training family therapists. *J. Nerv. Ment. Dis.* **148**, 251—261 (1969)
- Bortz, J.: *Lehrbuch der Statistik*. Berlin-Heidelberg-New York: Springer 1977
- Braucht, G. N.: Immediate effects of self-confrontation on the self-concept. *J. Cons. Clin. Psychol.* **35**, 95—101 (1970)
- Cattell, R. B.: Patterns of change: Measurement in relation to state dimension, trait change, lability and process concepts. In: *Handbook of multivariate experimental psychology*, R. B. Cattell (ed.). Chicago: Rand McNally 1966
- Chassan, J. B.: *Research design in clinical psychology and psychiatry*. New York: Appleton-Century-Crofts 1967
- Danet, B. N.: Self-confrontation in psychotherapy reviewed. Videotape playback as a clinical and research tool. *Am. J. Psychother.* **22**, 245—257 (1968)
- Feldmann, H.: Zur Bedeutung des Einzelfalles in der psychologischen Medizin. In: *Die Wirklichkeit des Unverständlichen*, J. M. Broekman, G. Hofer (eds.). Den Haag: Martinus Nijhoff 1974

- Griffiths, R. D. P.: Videotape feedback as a therapeutic technique: Retrospect and prospect. *Behav. Res. Ther.* **12**, 1—8 (1974)
- Griffiths, R. D. P., Gillingham, P.: The influence of videotape feedback on the self-assessments of psychiatric patients. *Br. J. Psychiat.* **133**, 156—161 (1978)
- Griffiths, R. D. P., Hinkson, J.: The effect of videotape feedback on the self-assessments of psychiatric patients. *Br. J. Psychiat.* **123**, 223—224 (1973)
- Hartwich, P.: Kognitive Leistungen bei Schizophrenien. *Fortschr. Med.* **96**, 1031—1035 (1978)
- Helmchen, H., Renfordt, E. (eds.): *Fernsehen in der Psychiatrie*. Stuttgart: Thieme 1978
- Hersen, M., Barlow, D. H.: *Single-case experimental designs: Strategies for studying behavior change*. New York: Pergamon Press 1976
- Huber, H. P.: Kontrollierte Fallstudie. In: *Hdb. Psychol.*, L. J. Pongratz (ed.), Bd. 8, 2. Halbbd. Göttingen: Hogrefe 1978
- Kirk, R. E.: *Experimental design: Procedures for the behavioral sciences*. Belmont: Brooks, Coole 1968
- McNair, D. M., Lorr, M.: An analysis of mood in neurotics. *J. Abn. Soc. Psychol.* **69**, 620—627 (1964)
- Moore, F. J., Chernell, E., West, M. J.: Television as a therapeutic tool. *Arch. Gen. Psychiat.* **12**, 217—220 (1965)
- Mombour, W., Kockott, G., Fliege, K.: Psychopathologische Befunderhebung und -dokumentation im Rahmen einer pharmakologischen Studie unter besonderer Berücksichtigung der Beobachter-Übereinstimmung. In: *Multifaktorielle Probleme in der Medizin*, H. J. Bochnik, W. Pittrich (eds.). Wiesbaden: Akad. Verlagsgesellschaft 1976
- Osgood, C. E., Suci, G. J., Tannenbaum, D. H.: *The measurement of meaning*. Urbana: University of Illinois Press 1957
- Overall, J. E., Gorham, D. R.: The brief psychiatric rating scale. *Psychol. Rep.* **10**, 799—812 (1962)
- Petermann, F. (ed.): *Psychotherapieforschung. Ein Überblick über Ansätze, Forschungsergebnisse und methodische Probleme*. Weinheim: Beltz 1977
- Scharfetter, Chr.: *Allgemeine Psychopathologie*. Stuttgart: Thieme 1976
- Schönplflug, W.: Psychische Vorgänge beim psychologischen Skalieren. I. Urteilstendenzen bei der Benutzung von Skalen mit sieben Stufen. *Psychol. Beitr.* **11**, 286—304 (1969)
- Shapiro, M. B.: The single case in clinical-psychological research. *J. Gen. Psychol.* **74**, 3—23 (1966)
- Shine, L. C.: A multi-way analysis of variance for single-subject designs. *Educ. Psychol. Meas.* **33**, 633—636 (1973)
- Shine, L. C., Bower, S. M.: A one-way analysis of variance for single-subject designs. *Educ. Psychol. Meas.* **31**, 105—113 (1971)
- Vernardos, M. G., Harris, M. B.: Job interview training with rehabilitation clients: A comparison of videotape and role-playing procedures. *J. Appl. Psychol.* **58**, 365—367 (1973)
- Watson, D., Friend, R.: Measurement of social-evaluative anxiety. *J. Consult. Clin. Psychol.* **33**, 448—457 (1969)
- Woggon, B., Baumann, U., Angst, J.: Interrater-Reliabilität von AMP-Symptomen. *Arch. Psychiat. Nervenkr.* **225**, 73—85 (1978)