

Cognitive Disorders in Schizophrenics Viewed from the Attribution Theory*

Wulf Rössler and Birgitt Lackus

Psychiatrische Klinik des Zentralinstituts für Seelische Gesundheit, J5, D-6800 Mannheim, Federal Republic of Germany

Summary. During the last decade, attributional theory has developed into one of the most important areas of research in social psychology. Its subject matter is lay-theoretical causal interpretations of observed behaviour. However, it has almost never been used to explain the cognitive deficits of schizophrenics.

The present study is based on the attributional theory of Kelley (1967). It demonstrates that schizophrenic subjects with very few or no psychopathological symptoms make more incorrect or unusual causal attributions in experimental social situations than controls. Incorrect causal attributions are particularly likely to occur when causes are to be seen in the specific characteristics of a situation and when the schizophrenic feels perceptually handicapped. They then tend to prefer stable (e.g. traits) to situation-specific causal categories. This suggests a general coping strategy designed to make the world more predictable and controllable.

Key words: Schizophrenic thought disorder – Cognitive disorder – Attribution theories

Introduction

Since the time of Kraepelin (1913) and Bleuler (1911) disorders of thinking, perception and speech have been regarded as characteristic features of schizophrenia. In clinical practice they are used for diagnostic purposes even in non-acute phases of the illness.

These so-called “cognitive” psychopathological phenomena have also attracted the attention of experimental psychological research. The research strategies employed in experimental research on schizophrenia first led to the investigation of cognitive information processing as responding to basic stimuli like light and tone (e.g. Rey and Oldigs 1982), as these designs seemed to provide the best way of controlling for the variables included. With expanding knowledge experimental research on schizophrenia gradually focussed on more complex cognitive disorders, beginning to investigate the ways of experiencing and behaving peculiar to schizophrenic patients and known from clinical practice (Hartwich 1983). In German-speaking countries the concept of “Basisstörungen” (basic symptoms) became widely accepted (Süllwold 1977). It has contributed a great deal to the understanding of schizo-

phrenic disturbances, and the first approaches to applying it in clinical practice have proved fruitful (Plaum 1983).

Nevertheless, even today experimental psychological investigations of the more complex cognitive disorders in schizophrenia are an exception rather than a rule – apart from the studies conducted on disordered concept formation (Ruckstuhl 1981). In this context hardly any research has been conducted on social perception in schizophrenia and almost no attention at all has been paid to the attribution theories, which in the course of the last decade have grown to one of the leading research fields in social psychology (Herkner 1980).

The aim of attribution research is to investigate the causes to which individuals attribute perceived events or behaviour. In other words, this research field deals with lay opinions of causality, how these opinions evolve and what effects they have. According to Heider (1958), who set up the attribution theories, they represent cognitive processes enabling individuals to cope in an infinitely multifarious and ever-changing environment. With the help of the lay theories people structure the stream of phenomena by contriving a finite number of invariant categories. With regard to their content, these categories can be interpreted as causal attributions. According to Heider attributions are not an end in themselves, but arise from the necessity to make the outer world better predictable and controllable.

In acute-productive phases of schizophrenia attribution processes are obviously disturbed. From the viewpoint of attribution theories delusions can often be explained as extreme attributions or derangements of normal attributions, e.g. “thought withdrawal” can be interpreted as a pathological extreme variant of a tendency to external causal attributions (Süllwold 1982).

In non-acute phases disturbances in attribution processes are less obvious. This is indicated by the “personal construct” theory of Kelly (1955), which is allied to attribution theories. Its applicability to disturbed thought processes in schizophrenia has been studied by Bannister (1960, 1962). He observed a looseness of the normally highly correlating concepts of persons in schizophrenic patients. His findings have been confirmed and further differentiated in several later studies (Ruckstuhl 1981). This looseness results from the incapacity of schizophrenic patients to make use of their personal concepts in judging and predicting social phenomena (Space and Cromwell 1978).

Given the limited capacity of schizophrenics to judge and predict social events it seems promising to investigate thought processes in schizophrenia from an attribution theoretical

Offprint requests to: W. Rössler at the above address

* Dedicated to Professor Dr. Dr. H. Häfner to his 60th birthday

viewpoint, in other words, to try to find out to what extent disturbances of social perception in schizophrenia result from an inability to make correct causal attributions. However, to study acute-productive episodes of schizophrenia on an attribution theoretical basis is of little use: e.g. to define delusions as disturbed attribution processes would just be renaming a known phenomenon and thus be of no explicatory value. The identification of schizophrenic disturbances of thinking in non-acute episodes which have a bearing upon the ability to judge social situations, might contribute to the understanding of this illness and provide clues for new therapeutic approaches, taking into account not only the perceptual and thought deficits as such, but also their effects on the capacity of social interaction of schizophrenic patients.

The Attribution Theoretical Framework

Heider distinguished two main categories to which observed behaviour is generally attributed, the person carrying out an action and his environment. Following Heider, various other attribution theoretical approaches have been formulated. The most comprehensive and most general of all was that of Kelley (1967). He added to Heider's attribution model a third causal category, the specific circumstances under which an event takes place at a specific point in time. The observer has thus three categories at his disposal for the attribution of causes:

- the person carrying out an action
- the object, i.e. the person or thing the action is directed at,
- the specific circumstances arising from the situation.

While in person or object attributions relatively stable dispositions or characteristics are assumed, in attributions to the specific circumstances of a situation we are dealing with an unstable, transient causal category.

How does an individual decide on one or another causal category? The core of Kelley's theory (1967) consists of the covariation principle: the observer of an event identifies covariations or correlations and interprets these as causal relationships. The effect will be attributed to that condition which is present when the effect is also present and which is also absent when the effect is absent. In order to be able to make causal attributions, the observer needs certain information indicating the factors correlating with the event. According to Kelley the choice of potentially relevant information can be classified by three categories. They are illustrated by the following example:

A (person) is scolding B (object). To find out whether the cause for person A scolding object B resides in A, B or the circumstances, the observer needs detailed information that can be classified as follows:

Consensus: it is high, if several other persons behave like that towards B (i.e. several persons scold B) and low if only few persons behave like that towards B (i.e. only few persons scold B);

Distinctiveness: it is high if A behaves like that only towards few objects (i.e. only seldom scolds other persons) and low if A behaves like that towards many other objects (i.e. often scolds other persons);

Consistency: it is high if this has been A's behaviour towards B at several points in time (i.e. A has scolded B many times

Table 1. Causal interpretation of social events as related to information patterns

Causes	Information patterns		
	Consensus	Distinctiveness	Consistency
Person	Low	Low	High
Object	High	High	High
Circumstances	Low	High	Low

before) and low if A has only seldom behaved like that toward B (i.e. only seldom scolded B).

The complete patterns of information needed to make attributions to persons, objects or circumstances are presented in Table 1.

If there is one piece of information available from all three categories each – i.e. consensus, distinctiveness and consistency – a clear-cut causal attribution can be made. If, returning to our example, several people scold B (high consensus) and A scolds only B and no one else (high distinctiveness) and A often scolds B and no one else (high consistency), the conclusion will be that it is B's rather than A's fault that A is scolding B. According to Table 1 certain information configurations clearly point to certain causal attributions. This theoretical postulation of Kelley was first subjected to experimental testing and confirmed by McArthur (1972). Further trials (e.g. Orvis et al. 1975; McArthur, 1976) have also shown that healthy subjects base causal attributions on specific information as predicted by Kelley. This aspect of the theory can therefore be regarded as well established.

But in every-day life situations often arise in which the observer does not have all the necessary information, i.e. information is not available from all three categories. In such cases the observer refers to substitute patterns. The missing information necessary for the causal attribution is substituted by the observer. E.g. high consensus information alone may lead to a clear object attribution. Similarly, clear low distinctiveness information points to a person attribution and low consistency information to a circumstances attribution. If the information available is ambiguous, the event may be assigned to several possible causes that are in accord with the information available. The hypothesis that the observer uses substitute patterns if the information available is not complete has been confirmed by Orvis et al. (1975).

Finally it should be mentioned that in the last few years attribution research has become increasingly interested in the influence of "irrational" motives, leading to attribution errors (Herkner 1980). Most of the factors identified as leading to incorrect attributions can be subsumed under the heading "ego defensive attributions". Factors causing attribution distortions in conjunction with illness-related disturbances have so far been studied only for depressive illness (Rizley 1976), and not for schizophrenic psychoses.

Aims and Questions

We based our study on Kelley's theory (1967). It is an attempt to investigate the applicability of this theory on the process of thought in schizophrenics with a view to their ability to judge or to predict social situations. We tested the following questions:

does the schizophrenic thought disorder manifest itself beside the acute stage of the disease as a disturbance of the attribution processes, i.e. do schizophrenic subjects make more uncommon or erroneous attributions than normal subjects?

Are uncommon attributions more frequent in certain categories of causes?

Are there associations between an enlarged number of mistakes on the one hand and the psychopathological findings, the subjective perception of cognitive disturbances and persisting styles of cognitive perception on the other hand?

Sample

The index group consisted of 25 remitted patients (15 males and 10 females) with the diagnosis of paranoid-hallucinatory schizophrenia (I.C.D. no.295.3, 8th Rev.), shortly before discharge from in-patient treatment. The experimental subjects were aged between 20 and 51 years, the mean was 29 years. In 13 of the subjects, it was the first onset of schizophrenia; the remaining 12 patients had been treated in hospital up to five times before. All schizophrenic subjects were being treated with depot neuroleptics at the time of investigation. For comparison, we selected a group of 25 normal control subjects matched for age, sex and education. In this group mental illness was excluded.

Experimental Design and Method

First, all subjects were given standardized instruction for the course of the investigation. We attached much weight on conveying to the subjects that we were interested in their personal opinion in the experimental situation. We made clear to them that they could not make any mistakes in the investigation. Our aim was to prevent the subjects from feeling anxious and exposed to an achievement situation. Thereafter, 18 written descriptions of different social events were presented and additionally read out to them. The descriptions of events were selected following McArthur's model (1976). Unlike McArthur, we selected a greater number of events describing an act or skill of an individual rather than events referring to a person's emotional state or opinion. Especially for the group of schizophrenic subjects it seemed advantageous to us to base the descriptions on concrete i.e. observable structural features of a situation, rather than on inner states of an individual. For each description of an event, three items of information were presented and read out to the subjects in succession, i.e. only the consensus, the distinctiveness or the consistency information which *clearly* lead to a specific causal attribution. The succession of the information given had been determined at random and fixed accordingly. The composition of this partial information corresponded to the one in McArthur's study, namely:

high consensus information (hc): almost everyone (is afraid of the neighbour's dog)

low distinctiveness information (ld): (Fritz is afraid of) almost every other (dog)

low consistency information (lcs): in the past (Fritz) was almost never (afraid of the dog)

After each partial information the subjects were asked to note down what in their opinion was causal for the event. The time for answering the questions was not limited.

The 18 descriptions of events and, set in brackets, the order and kind of the partial information given are listed in the following:

1. Monika is playing Monopoly. (ld/hc/lcs)
2. Mr. Schmidt speaks highly of his wife's cooking. (ld/lcs/hc)
3. Klaus buys a newspaper. He enjoys reading this newspaper. (hc/ld/lcs)
4. Mrs. Schulz is watching a thriller on TV. (hc/lcs/ld)
5. Dr. Müller speaks highly of the piece of work, just manufactured by Hans. (hc/ld/lcs)
6. Kurt is angry with his friend Manfred. (ld/lcs/hc)
7. Mrs. Meier is helping an old lady in the neighbourhood. (lcs/hc/ld)
8. Fritz is afraid of the neighbours's dog. (lcs/ld/hc)
9. Michael is one of Mr. Schulz' students. Michael thinks little of Mr. Schulz. (lcs/hc/ld)
10. Hans and Gisela attend the same school. Today they have a date together. (hc/lcs/ld)
11. Mr. Müller is doing some handicraft. He can concentrate well upon this work. (hc/lcs/ld)
12. Mrs. Kurz is an actress. Shortly before the show she is very nervous. (lcs/hc/ld)
13. Mr. Müller and his family go out for dinner to an Italian restaurant. (hc/lcs/ld)
14. Barbara would like to have a new dress. She goes to a boutique on main street. (hc/lcs/ld)
15. Mr. Frank wants to drink a beer. He goes to the pub at the corner. (ld/lcs/hc)
16. Klaus and Fritz know each other for a long time. Today they meet in the city and Klaus is crossing the street. (ld/lcs/hc)
17. Walter is listening to a lecture. He feels bored. (lcs/ld/hc)
18. Helmut goes to the museum. He spends a lot of time looking at a picture of Picasso. (hc/lcs/ld)

The psychopathology in the group of schizophrenics was assessed by means of the symptom list of the AMDP (Arbeitsgemeinschaft für Methodik und Dokumentation in der Psychiatrie). Additionally, we applied the "Frankfurter Beschwerdeliste" for detecting uncharacteristic "Basisstörungen" among the schizophrenic subjects, and the IPC Questionnaire by Krampen (1981). The latter includes to what extent subjects explain events to themselves by internal factors, i.e. factors lying in themselves, or by external factors determined by the environment.

Statistical comparison between the group of schizophrenics and the normal controls was made using a test method free from parameters: the Mann-Whitney U Test, two-sided version. In order to facilitate the comparison of distributions, we plotted the distributions as smoothed frequency polygons. The statistical correlations between incorrect attributions made by the schizophrenic group and the "Frankfurter Beschwerdeliste" as well as the IPC Questionnaire (by Krampen) were computed by means of the Spearman rank correlation coefficient.

Results

First we were interested in comparing the total number of incorrect attributions made by the group of schizophrenics with that of the control group. An attribution was incorrect, if the partial information given clearly pointed to a specific causal category (see Table 1), but the subject made a different causal attribution.

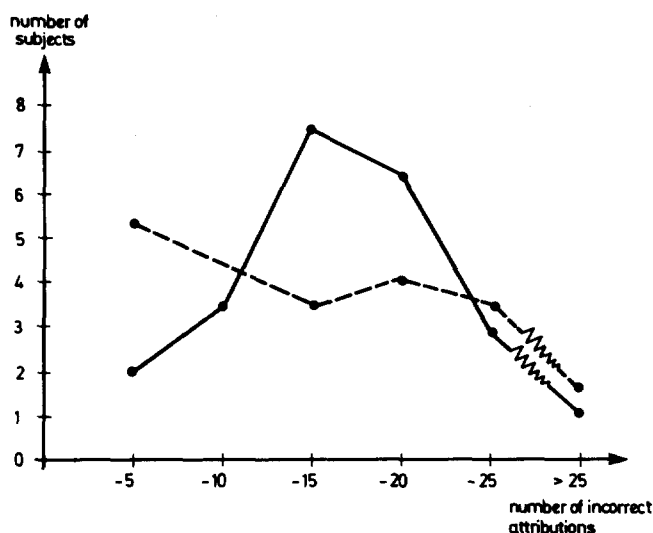


Fig. 1. Comparison between incorrect attributions in all by schizophrenics (—) and normal controls (---)

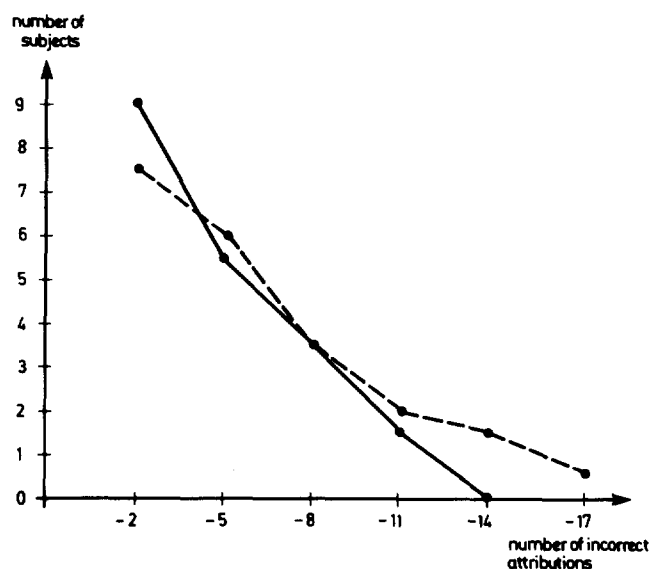


Fig. 2. Comparison between incorrect person attributions by schizophrenics (—) and normal controls (---)

Figure 1 shows the total number of incorrect attributions made by the group of schizophrenics and by the controls. We can clearly see that in the group of schizophrenic patients, many subjects committed about 15 errors in a total of 54 choices. In the control group, the number of subjects making incorrect attributions decreased almost continuously with increasing number of errors. Statistical verification of these findings ($u = 2.15$; $P < 0.05$) revealed a significant difference between the group of schizophrenics and the controls.

As the total number of incorrect attributions is the sum of the three categories of causes (person, object and circumstances), we may consider each category separately.

Figure 2 illustrates the distribution of errors in person attribution. Here, the curves for schizophrenics and controls ran rather similarly. Many subjects committed few errors and few subjects committed many errors. Statistical examination of

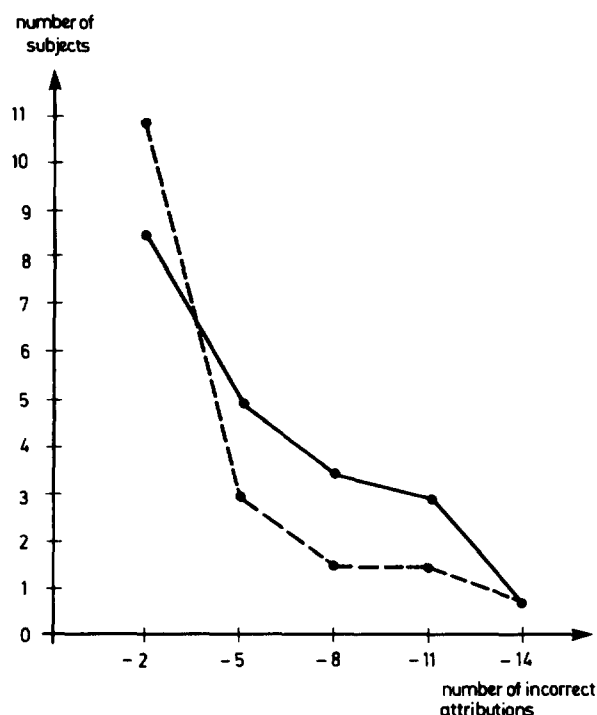


Fig. 3. Comparison between incorrect object attributions by schizophrenics (—) and normal controls (---)

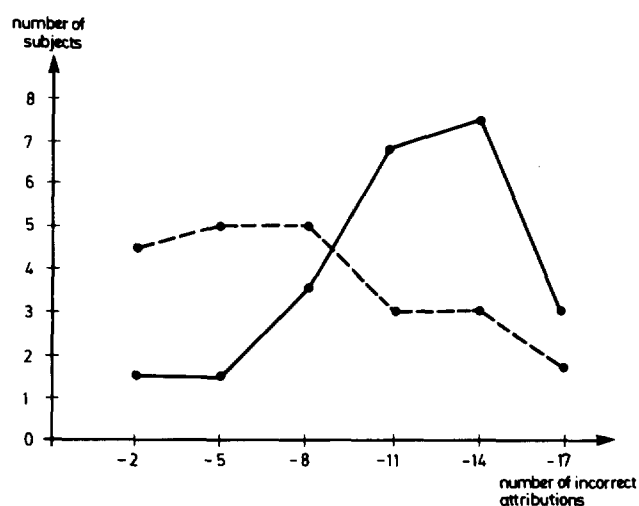


Fig. 4. Comparison between incorrect circumstance attributions by schizophrenics (—) and normal controls (---)

this result showed no significant differences ($u = 0.59$; N.S) between the two groups. The distribution of incorrect object attributions shown in Fig. 3 reveals that on average the group of schizophrenics committed more errors at the medium range of incorrect attributions ($u = 1.99$; $P < 0.05$). When considering the errors committed in the category of circumstance attributions, there was a highly significant difference between the schizophrenics and the controls ($u = 2.63$; $P < 0.01$). Figure 4 illustrates that only a small number of schizophrenics made few errors, whereas the majority of them committed many errors in this causal category. Although the information

given clearly points to the circumstances as an explanation, the schizophrenic patients assigned other causes to the events.

Evaluation of the "Frankfurter Beschwerdeliste" revealed a significant correlation ($r = 0.36$; $P < 0.05$) between the total number of incorrect attributions and the perception subscale of the Complaint Schedule that indicates subjective feelings of perceptual disorders. Besides, there was a significant correlation ($r = 0.39$; $P < 0.05$) between incorrect circumstance attributions and the dimension of "external causal attribution" assessed by means of Krampen's IPC Questionnaire.

According to the symptom list of the AMDP, there were no disturbances of consciousness or orientation and no delusional ideas, hallucinations or disturbances of ego. Among a small number of schizophrenic subjects, disturbances of memory, of formal thought and affect, all to a minor extent, were assessed at the time of investigation.

Discussion

The findings of this study show that subjects suffering from schizophrenia make more uncommon attributions than a comparable control group, even when their disease is not at an acute stage. We may assume that the ability to make adequate causal attributions is probably even more impaired than is shown by our findings, for a disturbance of the process of thought manifests itself by an increased expenditure of time or number of erroneous attributions. A time limit, which was not included in the experimental set-up of this study, would probably result in an even higher number of incorrect attributions.

The findings of this study are remarkable, because psychopathological examination of the group of schizophrenics showed no or only minor disturbances at the time of investigation. By means of Kelley's attribution theory, we have succeeded in identifying a field of disturbances in the thought process of schizophrenics, even though routine clinical diagnosis did not detect any conspicuous findings in the majority of cases. The identification of such disturbances that can scarcely be found with clinical methods, is not only of interest for diagnostic reasons but also because we may obtain some indication of the distorted perception of social situations in schizophrenic patients.

Whether the thought disorder assessed in this study is a primary disturbance or a secondary "ego defending" disturbance in the sense of a coping reaction, cannot be answered within this setting. However, the fact that normal persons tend to make "uncommon" attributions to a varying extent, indicates that the disturbance is non-specific.

Summing up we may state that the differences between the schizophrenic and the normal subjects were of a more quantitative than qualitative kind. These differences become particularly distinct: (a) when schizophrenic subjects feel subjectively impaired in their perceptivity (significant correlation between the total number of incorrect attributions and the "perception subscale" of the "Frankfurter Beschwerdeliste"), and (b) when interpreting situations that should usually be explained by their special circumstances. Here, schizophrenics tend to see the cause rather in the person carrying out an act or in the object to which the act refers. Such incorrect circumstance attributions are particularly marked among those schizophrenics who, according to their style of cognitive perception, use external, i.e. environmental factors for causal explanation rather than factors laying in themselves (signifi-

cant association between the dimension of "external causal attribution" of the IPC Questionnaire by Krampen and increased number of incorrect circumstance attributions).

Whereas the increased number of incorrect attributions accompanied by a subjective feeling of impaired perceptivity does not need any further explanation, the second result requires separate consideration. As mentioned previously, the specific circumstances of a situation form a relatively unstable, preliminary category of causes, which makes it more difficult to estimate and predict what happens in the world. Attributions to persons, however, render it possible to predict the behaviour of these persons in future situations, since relatively lasting qualities are assigned to them. The increased number of incorrect circumstance attributions and the preference of stable and outlasting categories of causes may therefore be interpreted within the scope of coping reactions for ego defense, as an attempt to make the world more predictable and more controllable. This reaction becomes all the more distinct, as the world does not seem to be very controllable in the sense of Krampen's IPC Questionnaire. But the preference given to more stable causal categories entails the danger of maintaining causal explanations that create fear, over a longer period of time. It is therefore easy to understand that such distortions of perception burden the social interaction with other individuals.

The findings of this study as a whole show that attribution theories can make a valuable contribution to the understanding of the schizophrenic disorder and its social consequences.

References

- Bannister D (1960) Conceptual structure in thought disordered schizophrenics. *J Ment Sci* 106: 1230-1249
- Bannister D (1962) The nature and measurement of schizophrenic thought disorder. *J Ment Sci* 108: 825-842
- Bleuler E (1911) *Dementia praecox oder die Gruppe der Schizophrenien*. Deuticke, Leipzig
- Hartwich P (1983) Kognitive Störungen bei Schizophrenen. *Nervenarzt* 54: 455-466
- Heider F (1958) *The psychology of interpersonal relations*. Wiley, New York
- Herkner W (1980) Attribution. *Psychologie der Kausalität*. In: Herkner W (Hrsg) *Attribution, Psychologie der Kausalität*. Huber, Bern, Stuttgart, Wien
- Kelley HH (1967) Attribution theory in social psychology. In: Levine D (ed), *Nebraska symposium on motivation*. University of Nebraska Press, Lincoln
- Kelly GA (1955) *The psychology of personal constructs*. Vol I, II. Norton, New York
- Kraepelin E (1913) *Psychiatrie*. Bd III: *Klinische Psychiatrie*, 2. Teil, Barth, Leipzig
- Krampen A (1981) *IPC-Fragebogen zu Kontrollüberzeugungen*. Hogrefe, Göttingen
- McArthur LA (1972) The how and what of why: Some determinants and consequences of causal attributions. *J Pers Soc Psychol* 22: 171-193
- McArthur LA (1976) The lesser influence of consensus than distinctiveness information on causal attribution: A test of the person-things hypothesis. *J Pers Soc Psychol* 33: 733-742
- Orvis BR, Cunningham JD, Kelley HH (1975) A closer examination of causal inference: The role of consensus, distinctiveness and consistency information. *J Pers Soc Psychol* 32: 605-616
- Plaum E (1983) Die Bedeutung kognitiver Störungen für den Umgang mit psychotischen Patienten. *Psychiatr Prax* 10: 183-188
- Rey ER, Oldigs J (1982) Ergebnisse einer experimentellen zweijährigen Verlaufsuntersuchung zu Störungen der Informationsverar-

- beutung Schizophrener. In: Huber G (Hrsg) Endogene Psychosen: Diagnostik, Basissymptome und biologische Parameter. Schattauer, Stuttgart, New York
- Rizley RC (1976) The perception of causality in depression: An attributional analysis of two cognitive theories of depression. Doctoral Dissertation, Yale University
- Ruckstuhl U (1981) Schizophrenieforschung. Die theoretischen und empirischen Beiträge der experimentellen Psychologie. Beltz, Weinheim, Basel
- Space LG, Cromwell RL (1978) Personal constructs among schizophrenics. In: Schwartz S (ed) Language and cognition in schizophrenia. Erlbaum, Hillsdale
- Süllwold L (1977) Symptome schizophrener Erkrankungen. Uncharakteristische Basisstörungen. Springer, Berlin, Heidelberg, New York
- Süllwold L (1982) Zum Einfluß von Sekundärreaktionen auf die Langzeitentwicklung schizophrener Psychosen. In: Beckmann H (Hrsg). Biologische Psychiatrie. Fortschritte psychiatrischer Forschung. Thieme, Stuttgart, New York

Received November 14, 1985