European Journal of Psychological Assessment, Vol. 20, Issue 4, pp. 216–226

Assessment of Situation-Behavior Profiles and Their Guiding Cognitive and Affective Processes

A Case Study from the Domain of Aggressive Behaviors

Laurence Claes, Iven Van Mechelen, and Hans Vertommen

Department of Psychology, Catholic University Leuven, Belgium

Keywords: Personality assessment, situation-behavior profiles, social-cognitive theory, aggressive behavior

Summary: Assessment of dysfunctional cognitive processes that guide maladaptive behavioral functioning is a sine qua non for cognitive behavioral treatment. Such an assessment, however, is cursed with at least three problems. Firstly, people may not always have access to their cognitive processes, which may hamper the retrieval of them by means of direct questioning procedures. Secondly, the contents of dysfunctional cognitions can be highly idiographic, which may limit their assessment by means of nomothetic instruments. Thirdly, one may wish to go beyond the assessment of the contents of the cognitive beliefs and chart the links with the situational conditions under which these dysfunctional beliefs are applicable, their interrelations and their links with the ultimate maladaptive behaviors. This article describes a novel method that may be helpful in this respect. After outlining its major principles, we illustrate them with a case study of an impulse control disordered patient.

The core tenet of the cognitive model is that individuals are not passive receptacles of environmental stimuli or physical sensations, but are actively involved in constructing their own realities (Beck, 1976, 1987). All perception, learning, and knowing are the products of an information-processing system that actively selects, filters, and interprets environmental and other sensory stimuli that impinge on the individual; and in addition, the individual generates stimuli. Consequently, individuals may attach highly personal, idiographic meanings to events. These meanings may subsequently lead to maladaptive emotional or behavioral responses if they reflect inaccurate representations of events (Beck, 1991). If cognitive dysfunction is crucial for the maintenance of symptoms, then change across a broad range of behavioral and emotional symptoms can only be achieved by modifying dysfunctional cognitions. In other words, behavioral and emotional improvement is possible only if the mediating cognitive products, processes, and structures change (Clark & Steer, 1996).

Before one can change these distorted cognitive processes, they must be assessed in a systematic way. The aim of such an assessment is to uncover the contents of and the relations between the dysfunctional attributions, expectations, current concerns, self-statements, images and beliefs, and to discover the connections between these variables and maladaptive behaviors (Hollon & Kendall, 1980). Various psychometric instruments can be useful in this respect (Hollon & Kendall, 1980; Seligman, Abramson, Semmel, & Von Baeyer, 1979; Beck, Brown, Steer, Eidelson, & Riskind, 1987).

One must note, however, that the assessment of cognitive processes is cursed with at least three problems. Firstly, as observed by several authors (Beck, 1976;

EJPA 20 (4), © 2004 Hogrefe & Huber Publishers
DOI: 10.1027/1015-5759.20.4.216

Clark & Steer 1996; Nisbett & Wilson, 1977) people may not always have access to their cognitive processes. As such this may hamper the retrieval of dysfunctional beliefs by means of direct questioning procedures. Secondly, the contents of dysfunctional cognitions can be highly idiographic, which may limit their assessment by means of nomothetic instruments. Thirdly, one may wish to go beyond the assessment of the contents of the cognitive beliefs that instigate maladaptive feelings and behaviors, and also chart the links with the situational conditions under which these dysfunctional beliefs are applicable, their interrelations and their links with the ultimate maladaptive behaviors (Beck, 1996).

To account for these problems, tools that go beyond the scope of traditional assessment instruments are needed. This article describes a novel method that may be helpful in this respect. As such, it aims at capturing and visualizing the reciprocal relationships between situational features, disturbed cognitive and emotional processes, and maladaptive behaviors. From a theoretical viewpoint, the method is rooted in Mischel and Shoda's (1995, 1998) cognitive-affective approach to personality.

In the remainder of this paper we outline the general principles of this method (Section 2) and we illustrate its usefulness with a case study within the domain of aggressive behavior (Section 3). We conclude the paper with a discussion on the pros and the cons of the new assessment procedure and on its relevance for cognitive behavioral therapy (Section 4).

Theoretical Framework and Procedure

Theoretical Framework

In line with the work of Mischel and Shoda (1995, 1998), as well as that of cognitive behavioral therapists such as Bruch and Bond (1999), Leahy (1996), and Tarrier, Wells, and Haddock (1998), understanding maladaptive behaviors requires insight into (1) the context or situations that instigate the maladaptive responses as well as into (2) the cognitive and affective processes that underlie these situation-behavior relations.

Understanding the context or situation goes beyond a general description of the setting in which the target maladaptive behaviors occur (e.g., at home, at school) and requires a specification of the particular situational features or cues that have an impact on the behaviors (Bruch, 1999). Shoda, Mischel, and Wright (1994) refer to such situational characteristics as the active psychological features of the situation. Active psychological features could, for example, include whether one is alone, with another person, or with a group of persons in the situation, whether one is familiar with the other person(s) in the situation or not, and so forth. As an aside, one may note that major therapeutic techniques, including cue exposure, require a specification of the active psychological features that instigate maladaptive behaviors, as the patient has to learn to prevent these behaviors and subsequently learn more adaptive behaviors in response to the features in question (Clark & Steer, 1996).

Besides a detailed assessment of the situational cues, insight into the dysfunctional cognitive and affective processes that are triggered by them and that instigate the maladaptive responses is needed (Beck, 1991; Bruch & Bond, 1999; Clark & Steer, 1996; Leahy, 1996; Stein, 1992; Tarrier, Wells, & Haddock, 1998). According to Mischel and Shoda (1995, 1998) such mediating cognitive and affective processes may refer to encodings (constructs for the self, people, and events), expectancies and beliefs (about the social world and about the self), affects (feeling states and emotions), subjective values and goals, competencies, and self-regulatory plans (potential behaviors and plans or strategies for organizing action and affecting outcomes). One may note that therapeutic techniques such as cognitive restructuring directly focus on a patient's maladaptive cognitive and affective processes, in that they help him to reformulate his maladaptive interpretations of the situational cues by disputing the irrational thoughts and by generating more functional explanations (Beck, 1991; Ellis, 1962; Ellis & Grieger, 1986; Leahy, 1996).

Taken together, insight into both the situation-behavior relations (in Mischel and Shoda's (1995) terminology, the $\text{if}_{\text{situation}} \ldots - \text{then}_{\text{behavior}} \ldots$ profiles) and in the cognitive and affective processes that underlie them, are a therapeutically important target of clinical assessment.

Procedure

In what follows, we systematically describe a comprehensive assessment procedure (1) to capture the situational cues that instigate maladaptive responses (which allows us to chart relevant situation-behavior profiles) and (2) to capture the cognitive and affective processes that underlie those profiles. In the following, for each of these two aspects, we will explain the proposed method of data collection and data processing. In the next paragraph, we will illustrate each of the steps of this assessment procedure with data of a real patient.

Assessment of Situation-Behavior Profiles

Data Collection

1. A first step in the assessment procedure concerns the identification of the target maladaptive behaviors of interest by means of a clinical interview.
2. In a second step we try to identify (with the help of the literature and clinical interviews with the patient) potentially relevant features of situations which may have an influence on the target behaviors.
3. To test the relevance of the selected situational features we generate abstract situations in which we systematically manipulate, in a facet-theoretical way (Vansteelandt & Van Mechelen, 1998), the features under consideration.
4. Next, we ask the patient to describe real life situations that correspond to the abstract situational descriptions.
5. To link the situations and the behaviors, the patient is asked to indicate which of the target behaviors (1) *occurred* or (0) *did not occur* in each of the situations.

Data Processing

6. To uncover the patient's situation-response profiles, the situation × response data matrix is subjected to a hierarchical classes analysis (HICLAS; De Boeck & Rosenberg, 1988). Such an analysis implies the fitting of a hierarchical classes model to the data. Distinctive features of a hierarchical classes model of situation by behavior data include: (a) a grouping of situations and behaviors into situation and behavior classes, (b) hierarchical relations between (classes of) situations as well as between (classes of) behaviors, and (c) a linkage structure between the hierarchy of situation classes and the hierarchy of behavior classes. All three features show up in a comprehensive graphical representation that goes with each hierarchical classes model.
7. To derive the relevant situational features that instigate the target responses, we can look for common and distinctive features of situations that belong to the same situation class or group of situation classes. A good feature for a particular situation class is a feature that is characteristic for as many situations of that class as possible, and least possible for situations of other situation classes.
8. Note that this part of the analysis may reveal new relevant features that have not been involved in the a priori manipulation by the researcher. Note also that asking the patient to judge additional situations that fit new feature descriptions as provided by the researcher can test hypotheses about new relevant features. Subsequently, these additional judgments can be related to the model.

Assessment of the Cognitive-Affective Processes Underlying the S-R Profiles

Data Collection

9. To grasp the psychological mechanisms that underlie the $if_{situation}$ – $then_{behavior}$ profiles, possibly relevant cognitive and affective process variables can be identified on the basis of existing theories and a clinical interview with the patient.
10. To link the cognitive/affective variables to the situation/behavior profiles, the patient is asked to judge the applicability (yes/no) of each of the variables in each situation.

Data Processing

11. Next, the data concerning the cognitive and affective process variables are linked to the model of the situation × behavior data, using a so-called projection method, developed by Van Mechelen and De Boeck (1990). Such a projection may reveal the mediating mechanisms behind the situation-behavior profiles in terms of *if* (situation) *then* (cognition/affect), and *if* (cognition/affect) *then* (behavior) rules.
12. Asking the patient to compare different situation classes with respect to the cognitions and emotions they trigger can reveal additional relevant cognitive and affective process variables. Subsequently, the patient can be asked to judge the applicability of the cognitions and emotions obtained to each of the particular situations; these data can then again be projected in the HICLAS model. This process can be repeated several times, until a comprehensive clinically and therapeutically useful representation is obtained.

Case Study

We will now illustrate this assessment procedure with data of a real patient Ann. Ann is a twenty-year-old student who is still living at home. As a child she had been sexually abused by her father. According to her psychiatrist, she is suffering from an impulse control disorder. At the moment of referral, she was afraid of losing behavioral control, and, therefore, wants to learn to deal with her aggressive and destructive urges and behaviors (which include bingeing and purging, the urge to mutilate herself, and to beat other persons, . . .). To gain more insight into her problem, the situational features that in-

Table 1. Systematic overview of the target aggressive behaviors.

	Victim of the aggressive act			
Mode of the aggressive act	**Person who hurts: offender**	**Another person than offender**	**An object (of the offender)**	**The person himself**
With words	R_1: verbally aggressive toward offender: e.g., shout	R_4: verbally aggressive toward another person than offender: e.g., shout	R_7: verbally aggressive toward an object of offender: e.g., joke about clothes	R_{11}: verbally aggressive to oneself: e.g., negative self-talk
With actions	R_2: physically aggressive toward offender: e.g., hit	R_5: physically aggressive toward another person than offender: e.g., hit	R_8: physically aggressive toward an object of offender R_9: physically aggressive toward any object: e.g., break object	Physically aggressive to oneself: e.g., R_{12}: automutilation, R_{13}: suicide attempt, R_{14}: alcohol, drug, or medication abuse, R_{15}: binge and purge
By ignoring	R_3: ignore offender: e.g., give no attention to offender	R_6: ignore another person than offender: e.g., give no attention	R_{10}: ignore important object of offender	Ignore oneself: e.g., R_{16}: eat less or nothing; R_{17}: forbid oneself pleasant activities

stigate her maladaptive behaviors as well as the cognitive and affective processes that guide them are investigated by means of our assessment procedure.

Assessment of Situation-Behavior Profiles

Data Collection

Identify Target Maladaptive Behaviors

In a first step, we listed, by means of a clinical interview, the destructive urges and behaviors Ann was afraid of. In Table 1 these behaviors are ordered along two theoretically meaningful dimensions: The first one refers to the *mode* of the aggressive behavior (verbal, physical, and passive aggressive – see Averill, 1983; Buss & Perry, 1992; Lish, Kavoussi, & Coccaro, 1996; Morrisson, 1990); the second one refers to the *victim* of the aggressive act (the offender, person other than the offender, an object, or the patient herself – see Averill, 1983; Caine, Foulds, & Hope, 1967; Favazza & Simeon, 1995; Morrisson, 1990; Rosenzweig, 1944, 1976). Aggression against the offender, a third person, or an object can further be called extrapunitive; and aggression against oneself intropunitive (Rosenzweig, 1944, 1976; Morrisson, 1990). Furthermore, in the category of extrapunitive acts, aggression against a third person or an object can be called displaced aggression (Averill, 1983). In the category of intropunitive acts, Herpertz et al. (1995) differentiate between direct (e.g., cutting) and indirect (e.g., bingeing, purging) self-destructive acts.

Identify Potentially Relevant Situational Features

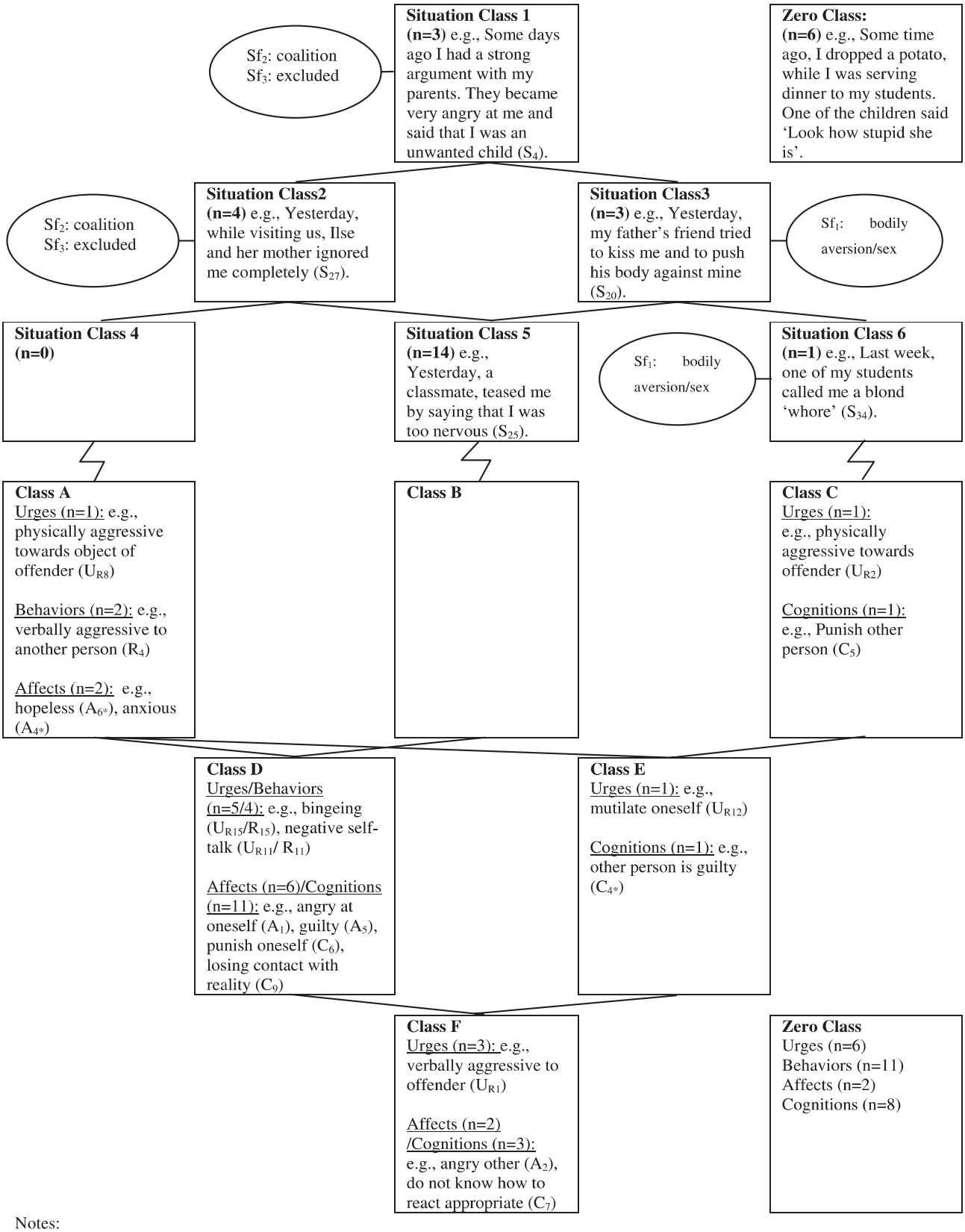
To retrieve the potentially relevant situational features that instigate Ann's aggressive behaviors, we resorted to the clinical literature on aggressive behavior as well as to Ann's diary notes in which she had mentioned situations that instigate her destructive urges and behaviors. On the basis of this information, four situational features seemed to be potentially relevant: (1) the amount of frustration (high/low; Feshbach & Weiner, 1991; Rosenzweig 1944, 1976), (2) the valence of the frustrator (positive/negative), (3) the status of the frustrator (higher, the same, lower) (Leary, 1957; Kiesler, 1996), and (4) the way of being frustrated (by means of words, physical acts, or by being ignored) as noted by Averill (1983), Buss and Perry (1992), Lish, Kavoussi, and Coccaro (1996).

Generate Abstract Situations in Which Relevant Situational Features are Systematically Manipulated

Accordingly, we created 36 abstract situations ($2 \times 2 \times 3 \times 3$) based upon the following design: "Think of a situation in which you were [strongly/slightly] hurt by a person you [like/dislike], who has [a higher/the same/a lower] status than you, and who hurt you by means of [words/ physical acts/ by ignoring you]."

Ask Patient to Describe Real Life Situations That Correspond to Abstract Situational Descriptions

Then Ann was asked to describe 36 real life situations (3 per day during 2 weeks) that corresponded to the abstract situational descriptions. For example, she filled out S_4 (strongly-like-higher-words) as follows: "Some days ago, I had a strong argument with my parents. They became very angry at me and told me that I was an unwanted child"; and S_{26} (slightly-dislike-same-ignoring) as "Ilse, the daughter of my mother's friend Irene, only speaks to me when she needs my computer, otherwise she and her mother ignore me." Five situations (S_{16}, S_{17},



Notes:
S_x=situation 'x'; R_x=behavior 'x'; U_{Rx}=urge towards behavior 'x';
A_x=affect 'x' with low intensity (recoded 0 vs. 1-2), A_{x*}=affect 'x' with high intensity (recoded 0-1 vs. 2);
C_x=cognition'x' with low intensity (recoded 0 vs. 1-2), C_{x*}= cognition 'x' with high intensity (recoded 0-1 vs. 2).

Figure 1. Graphical representation of the hierarchical classes model of Ann's data.

Table 2. Characterization of situations ordered by situation class in terms of situational features.

Situation Class	Situation	GOF[a]	Features of situations Level of frustration	Status of frustrator	Value of frustrator	Way of being frustrated
Class 1	S_4	.94	High	Higher	Liked	Verbal
	S_{22}	.94	High	Higher	Disliked	Verbal
	S_{24}	.84	High	Higher	Disliked	Ignoring
Class 2	S_{11}	1.00	High	Same	Liked	Physical
	S_{29}	.93	High	Same	Disliked	Physical
	S_{27}	.88	Low	Same	Disliked	Ignoring
	S_6	.82	High	Higher	Liked	Ignoring
Class 3	S_{19}	.85	Low	Higher	Disliked	Verbal
	S_{20}	.78	Low	Higher	Disliked	Physical
	S_{28}	.73	High	Same	Disliked	Verbal
Class 4						
Class 5	S_5	.92	High	Higher	Liked	Physical
	S_{21}	.92	Low	Higher	Disliked	Ignoring
	S_{10}	.91	High	Same	Liked	Verbal
	S_{25}	.91	Low	Same	Disliked	Verbal
	S_7	.84	Low	Same	Liked	Verbal
	S_{26}	.83	Low	Same	Disliked	Physical
	S_2	.83	Low	Higher	Liked	Physical
	S_1	.78	Low	Higher	Liked	Verbal
	S_{23}	.78	High	Higher	Disliked	Physical
	S_3	.76	Low	Higher	Liked	Ignoring
	S_{30}	.69	High	Same	Disliked	Ignoring
	S_8	.61	Low	Same	Liked	Physical
	S_9	.61	Low	Same	Liked	Ignoring
	S_{12}	.57	High	Same	Liked	Ignoring
Class 6	S_{34}	.80	High	Lower	Disliked	Verbal
Zero Class	S_{13}	(.00)	Low	Lower	Liked	Verbal
	S_{14}	(.00)	Low	Lower	Liked	Physical
	S_{15}	(.00)	Low	Lower	Liked	Ignoring
	S_{31}	(.00)	Low	Lower	Disliked	Verbal
	S_{32}	(.00)	Low	Lower	Disliked	Physical
	S_{35}	(.00)	High	Lower	Disliked	Physical

[a]GOF = goodness-of-fit value per situation.

S_{18}, S_{33}, S_{36}) could not be described. These items had in common that they asked for situations in which a person with a hierarchically lower status hurt Ann.

Let Patient Indicate Which of the Target Behaviors Did (not) Occur in Each of the Situations

To examine the link between the resulting 31 (36 minus 5) situations and the aggressive behaviors, we asked Ann to indicate in each of the situations (1) whether she had really displayed (0/1) each of the 17 target responses and (2) if this was not the case, whether she had had *the urge* to display them. This implied the collection of a zero/one 31 × 34 situation × response data matrix (actual responses and urges being treated as different variables).

Data Processing

Uncover the Situation-Response Profiles by Means of HICLAS

To uncover Ann's situation-response profiles, the situation × response matrix was subjected to a hierarchical classes analysis (De Boeck & Rosenberg, 1988). Such an analysis yields a series of hierarchical classes models of increasing complexity or rank (i.e., the number of classes at the bottom of the hierarchies). According to a goodness-of-fit criterion as well as to clinical interpretability, the solution in Rank 3 was selected. A graphical representation of this solution is represented in Figure 1.

Two situations belong to the same *situation class*, if for this patient, it holds that both situations elicit from

Table 3. Characterization of behaviors ordered by behavior class in terms of behavioral features.

Behavior Class	Urge (U_R)/ Behavior (R)	GOF[a]	Features of aggressive behaviors Mode	Victim
Class A	R_4	.85	Verbal	Other person
	R_3	.70	Ignoring	Offender
	U_{R8}	.60	Physical	Object offender
Class B				
Class C	U_{R2}	1.00	Physical	Offender
Class D	U_{R15}/R_{15}	1.00/.87	Physical	Self
	U_{R17}/R_{17}	.91/.79	Ignoring	Self
	U_{R11}/R_{11}	.88/.92	Verbal	Self
	U_{R4}	.84	Verbal	Other person
	U_{R6}/R_6	.79/.66	Ignoring	Other person
Class E	U_{R12}	.66	Physical	Self
Class F	U_{R3}	.84	Ignoring	Offender
	U_{R1}	.80	Verbal	Offender
	U_{R7}	.69	Verbal	Object offender
Zero Class	R_1	.00	Verbal	Offender
	R_2	.00	Physical	Offender
	U_{R5}/R_5	.00	Physical	Other person
	R_7	.00	Verbal	Object offender
	R_8	.00	Physical	Object offender
	U_{R9}/R_9	.00	Physical	Object
	U_{R10}/R_{10}	.00	Ignoring	Object offender
	R_{12}	.00	Physical	Self
	U_{R13}/R_{13}	.00	Physical	Self
	U_{R14}/R_{14}	.00	Physical	Self
	U_{R16}/R_{16}	.00	Ignoring	Self

[a]GOF = goodness-of-fit value per behavior.

this patient the same set of behaviors. In the upper half of the graphical representation, the situation classes appear as boxes containing the situation labels. In general, situations that belong to the same situation class may be considered functionally equivalent (Shoda et al., 1994). Similarly, two behaviors belong to the same *behavior class* if for the patient it holds that she displays either both behaviors or neither of the two in each situation. The latter implies that the classification of behaviors is based on co-occurrence across situations. Ann's solution includes six nonempty situation classes (including one zero class) and six nonempty response classes (also including one zero class).

Second, in the hierarchical classes model, both the situation and the behavior classes are *hierarchically* organized. In particular, a situation class is hierarchically below another situation class if whenever the situations of the hierarchical lower situation class elicit a certain behavior, then the situations of the hierarchically higher situation class also elicit that behavior, the reverse not necessarily being true. In the graphical representation, straight lines between the boxes represent hierarchical relations. Note that the behavior hierarchy is represented upside down.

The third component of the model is the *linkage* of the situation and behavior typologies into a single integrated structure. The linkage of the situation and behavior typologies may be looked at as a characterization of the patient in terms of a set of *if* (situation class) *then* (behavior class) rules (Wright & Mischel, 1987). Such an *if* (situation class) *then* (behavior class) rule indicates that whenever the patient in question faces a situation of the situation class, this person will display all behaviors from the behavior class. In the graphical representation the linkage structure is represented by a set of zigzags between the hierarchy of situation classes and the hierarchy of behavior classes. In particular, Ann's *if* (situation class) *then* (behavior class) rules can be read from this figure by following the downward paths from situation classes to behavior classes. For example, if Ann is called a blond "whore" by one of her students (Class 6), she feels the urge to become physically (Class C) and verbally (Class F) aggressive toward the offender and to ignore him (Class F) but she does not display any behavior to-

ward him; on the contrary, she really feels the urge to mutilate herself (Class E).

Look for Common and Distinctive Features of Situations to Identify Relevant Situational Cues

Next, we try to characterize each situation class in terms of a set of singly necessary and jointly sufficient features that are common to most situations of that class and that differentiate this class from other situation classes. Table 2, which includes a systematic overview of the feature descriptions of the situations ordered by situation class, is relevant in this respect. Note that this table also includes a goodness-of-fit-value per situation, which indicates how well the model fits to the data pertaining to this situation; when looking for feature descriptions of situation classes we will give more weight to situations with higher goodness-of-fit values.

As appears from Table 2, a comprehensive feature characterization of situation classes in terms of the provided features falls out of reach. However, apart from Class 5, a more or less satisfactory characterization can be given for all situation classes. As such, Situation Class 1 corresponds to "high, nonphysical frustration by frustrator of higher status"; Class 2 to "high nonverbal frustration by frustrator of same status"; Class 3 to "low frustration by disliked frustrator of higher status"; Class 6 to "high frustration by disliked frustrator of lower status"; and the zero class to "low frustration by frustrator of lower status."

The same way of reasoning was followed for the behavior classes. A schematic overview of the features per behavior, ordered by behavior class, is given is Table 3.

From this table, it appears to be much more difficult to derive feature characterizations of the behavior classes as compared to the situation classes. We can only propose the following tentative characterizations of the following four classes. As such, Class A corresponds to "nonphysical behaviors directed against non-self"; Class C to "physical behavioral urges directed against offender"; Class D to "behavioral urges and reactions directed against nonoffender"; and Class F "nonphysical urges directed against offender."

We can now try to redefine Ann's *if* (situation class) *then* (behavior class) rules in more feature-related terms. For example, if Ann is highly frustrated by a disliked frustrator of lower status (Class 6), then she feels the urge to react in a physical (Class C) and nonphysical (Class F) aggressive way against the offender.

Link Additional Situational Features to the Original Solution

Some situation classes could only be partially described in terms of singly necessary and jointly sufficient features, therefore, we wanted to look for additional features and link them to the original solution. To find these additional features we asked Ann to compare situations of situation classes that elicit the same behavioral reactions (e.g., the urge to self-mutilate in Class 1, 2, 3, and 6) and to find differences between those situations and situations in which these behavioral reactions did not occur (e.g., Class 5). For example, Ann noticed that some situations of Class 3 and Class 6 elicited an aversion toward her own body because the behavior/remark of the other person was sexually tinted (e.g., S_{34} of Class 6: A student called her a whore; S_{19} of Class 6: A friend who remarks "how much do I have to pay you for making love with me." Next, we asked Ann to point out whether these additional features applied to each of the 31 situations. A particular additional feature was then attributed to a particular situation class when more than 50% of the situations of that class was characterized by it. As a result Situation Classes 3 and 6 were characterized by "sexual provocation/bodily aversion" (Sf_1) and Situation Classes 1 and 2 by "coalition against the patient" (Sf_2) and "danger of being excluded" (Sf_3).

Assessment of the Cognitive-Affective Processes Underlying the S-R Profiles

Data-Collection

Identify Possibly Relevant Cognitive and Affective Process Variables

To grasp the psychological mechanisms that underlie the $if_{situation}$ – $then_{behavior}$ profiles, possibly relevant cognitive and affective process variables were identified on the basis of existing theories and interviews with the patient. As affective process variables we selected *anger (at oneself [A_1], at another person [A_2])*, *sadness* (A_3), *anxiety* (A_4), *guilt* (A_5) and *hopelessness* (A_6). Anger was split up into anger at oneself and at another person, because the first one is known to be associated with auto-aggressive behavior (Bennum, 1983), whereas the second one is linked to outward directed aggressive acts (Spielberger & Sydeman, 1994). Further, guilt and hopelessness are linked to suicidal ideation and behavior (Bennum, 1983). These, as well as other emotions (e.g., anxiety, sadness), were also mentioned by Ann herself.

At the same time, we selected some cognitive variables such as two cognitions related to *hostile encoding bias* (see Cantor & Mischel, 1979), which refers to the degree to which aversive experiences are interpreted as purposefully aggressive, irrespective of the actual intent of the other with whom one interacts (e.g., Did the other person hurt you on purpose [C_1]; and Did the other person want to attack your self-esteem [C_2]). Other variables included: *attributions/desire to punish* (e.g., Were

you [C_3]/was the other person [C_4] guilty; Did you have to punish the other person [C_5]/yourself [C_6]); *competencies* in regulating feelings and behaviors (Mischel, 1999; e.g., Did you know how to react in an appropriate way [C_7]; Did you control your behavior [C_8], Did you lose contact with reality [C_9]); and *behavior-outcome expectancies* (Bandura, 1986; Mischel, 1973; Rotter, 1954; e.g., Were you afraid that showing your feelings would lead to rejection [C_{10}]/dislike [C_{11}]/other disadvantages for yourself [C_{12}]).

Let Patient Indicate Which of the Cognitive/Affective Processes Did (Not) Occur in Each of the Situations

To link these cognitive/affective process variables to Ann's situation/behavior profiles, Ann was asked to judge the applicability of each of the variables for each situation on a 3-point scale (0 = not at all,1 = slightly,2 = strongly). Subsequently, each process variable was recoded into two binary variables reflecting two levels of intensity (0 vs. 1–2 and 0–1 vs. 2).

Data Processing

Link Cognitive/Affective Process Variables to the Model by Means of HICLAS (Projection)

Next, the recoded process variables were linked to the original situation × behavioral data set making use of the projection method developed by Van Mechelen and De Boeck (1990). This analysis results in the location of each of the process variables (at each of the two intensity levels) into classes of the behavior hierarchy (see Figure 1). From this projection *if* (situation class) *then* (process variable) rules as well as *if* (process variable) *then* (behavior class) rules may be derived.

For example, as can be derived from Figure 2, *if* Ann is in a situation where she is strongly frustrated by a hierarchically lower person (Situation Class 6) *then* she thinks that she has to punish the other person (C_5) and that the other person is very guilty (C_4), and she feels angry at him (A_2) but does not know how to react in an appropriate way (C_7). Moreover, *if* she thinks she has to punish the the other person, *then* she feels the urges to become physically (Class C) as well as nonphysically (Class F) aggressive against the offender and to mutilate herself (Class E).

Conclusion of the Case Study

Our assessment procedure clearly yields a functional analysis of Ann's destructive urges and offers several useful clues for successful therapy. For example, in situations in which Ann feels excluded by others (Class 1, 2), she becomes extremely hopeless, anxious (Class A), and angry (Class F) and reacts in a nonphysically aggressive way against the others (Class A, F). At the same time, she experiences feelings of anger and guilt, which in turn lead to self-destructive actions such as bingeing (Class D), driven by ideas of self-punishment. Cognitive techniques may be helpful in restructuring the irrational beliefs that guide these self-harming behaviors as well as learning alternative ways to cope with these negative feelings. For example, instead of thinking "If I become angry at others, I feel guilty and punish myself," Ann could rethink this irrational belief as "if I become angry at others, I don't have to punish myself and I can express my feelings toward them." At the same time she can learn to react in a more appropriate way than harming herself when feeling angry and guilty (Class D, E), for example by taking care of herself by means of behaviors such as calling a friend to talk, getting rid of her negative feelings and behavioral urges by sporting, and so forth. The same reasoning can be followed to teach Ann how to deal with situations in which she is sexually provoked (Class 3, 6). These situations evoke feelings of anger against the provokers (Class F), and the idea that she has to punish them because they are guilty (Class C, E). Although she feels urges to becomes aggressive against the provokers, she doesn't react against them and shows again a tendency to harm herself. In these cases it seemed crucial to teach Ann how to react when sexually provoked. This could be done by means of a role play in which the therapist plays the provoker (e.g., father's friend) and Ann learns to react more appropriately (e.g., by telling the provoker that she does not appreciate his behavior and then leaving). After learning these reactions in the therapy sessions, she can try to apply them outside the sessions and even generalize these reactions to other – equivalent – situations.

Discussion

We started this paper having noticed that the assessment of cognitive processes underlying maladaptive behavioral functioning is cursed with at least three problems. We now show how our assessment procedure can at least partially cope with each of them.

First, we mentioned that patients may not always have access to their cognitive processes. This may hamper the retrieval of particular dysfunctional beliefs and the relations of these with other variables by means of direct questioning procedures. In our assessment procedure, the patient only needs to verbalize her cognitions in particular situations and to assess whether these cognitions are also present or not in other specific real-life situations. Meta-cognitive knowledge about cognitions, in terms of co-occurrence, hierarchical relations, and links

with particular situational and/or behavioral features, emerge from our data-analysis and do not have to be generated by the patient herself.

Second, the content of dysfunctional cognitions, as well as of situational features that trigger them, can be highly idiographic, which may hamper their assessment by means of nomothetic instruments. To solve this problem, we proposed a technique that, besides nomothetic elements, leaves room for idiographic contents. A complete idiographic procedure may, for example, be chosen if one is interested in highly individual relationships between particular situations and behaviors, which can give individually tailored cues for therapy. The advantages of such a highly individualized method of data collection and data processing are in line with those of other idiographic techniques such as the Role Construct Repertory Test (Kelly, 1955), the Self-Confrontation Method (Hermans, 1974), the Semantic Differential Method (Osgood & Suci, 1955), and the Free-response description approach to the analysis of person-situation interaction (Pervin, 1976; Magnusson, 1981). However, if one prefers to make more general statements, for example, about situation-response patterns of distinct patient groups, more nomothetic elements have to be included in the procedure. Note that, in this respect, the number of nomothethic rather than idiographic elements in the procedure is a choice of the individual user and should depend on the goal of the research. For example, in our case study the selection of situational features was partially based on interviews with the patient (idiographic) and partially based on literature (nomothetic). Furthermore, the procedure included the opportunity to add – besides the a priori manipulated situational features – additional nomothetic or idiographic situational features. The same options are available for the selection of the cognitive and affective variables.

Finally, one may wish to go beyond the assessment of the contents of dysfunctional beliefs and also chart the links with the situational conditions under which these beliefs show up, their interrelations, and their links with the ultimate maladaptive behaviors. To solve this third problem, we developed a contextualized assessment procedure in which dysfunctional beliefs, as well as emotions and behavioral reactions, are assessed in a person-specific situational context, so that the situational variability of these variables can be be taken into account. Insight into both the individually tailored situational features that instigate maladaptive behaviors and their guiding irrational, cognitive, and affective processes is a sine qua non for a cognitive behavioral therapist. Indeed, in several therapeutic techniques such as cue exposure, the patient needs to learn to prevent her maladaptive reactions, while being exposed to the problem-provoking situational cues; if the therapist is unable to pinpoint the idiographic cues that instigate the maladaptive reactions the method will fail (Clark & Steer, 1996). Moreover, all techniques that are based on cognitive restructuring presuppose a good insight into the situational cues that trigger irrational beliefs (Beck, 1991; Ellis, 1962; Ellis & Grieger, 1986; Leahy, 1996).

We may further note that our elaborate diagnostic procedure might yield important therapeutic side effects. For example, Ann, the patient in our case study, mentioned that the graphical representation of her data made it easier for her to find some order in her chaotic and complex experiences. Also, each time she succeeded in reformulating some irrational cognitions or in changing inadequate behaviors, she changed these cognitions/behaviors in the graphical representation, so she would not forget them. Of course, to provide systematic empirical evidence on the added value of our procedure, more research would be needed.

Finally, regarding clinical feasibility, at first sight, the proposed assessment procedure may appear to be very time consuming, and to require considerable mental effort and intellectual sophistication from the client. This, however, is somewhat misleading. For example, the overall data collection in our case study took less than 3 h. Also the proposed procedure allows patients to describe their problems in their own words. Feedback can further be given to them with their own examples and in their own terms, which may be especially useful for patients who are less sophisticated intellectually. Otherwise, the fact that the procedure may be based on highly individualized data may make its results more acceptable and understandable for the patient.

Acknowledgment

The research reported in this paper was supported in part by grant GOA/00/02 of the Research Fund of K. U. Leuven, Belgium.

References

Averill, J.R. (1983). Studies on anger and aggression. Implications for theories of emotion. *The American Psychologist*, *38*, 1145–1160.

Bandura, A. (1986). Fearful expectations and avoidant actions as coeffects of perceived self-inefficacy. *American Psychologist*, *41*, 1389–1391.

Beck, A.T. (1976). *Cognitive therapy and the emotional disorders.* New York: International Universities Press.

Beck, A.T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy*, *1*, 5–37.

Beck, A.T. (1991). Cognitive therapy: A 30-year retrospective. *American Psychologist*, *46*, 368–375.

Beck, A.T. (1996). Beyond belief: A theory of modes, personality, and psychopathology. In P.M. Salkovskis (Ed.), *Frontiers of cognitive therapy* (pp. 1–25). New York: Guilford.

Beck, A.T., Brown, G., Steer, R.A, Eidelson, J.I., & Riskind, J.H. (1987). Differentiating anxiety and depression: A test of the cognitive content-specificity hypothesis. *Journal of Abnormal Psychology*, *96*, 179–183.

Bennum, I. (1983). Depression and hostility in self-mutilation. *Suicide and Life Threatening Behavior*, *13*, 71–84.

Bruch, M. (1999). The UCL case formulation model: Clinical applications and procedures. In M. Bruch & F.W. Bond (Eds.), *Beyond diagnosis: Case formulation approaches in CBT*. Chichester: Wiley.

Bruch, M., & Bond, F.W. (Eds.). (1999). *Beyond diagnosis: Case formulation approaches in CBT*. Chichester: Wiley.

Buss, A.H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, *63*, 452–459.

Caine, T.M., Foulds, G.A., & Hope, K. (1967). *Manual of the Hostility and Direction of Hostility Questionnaire (HDHQ)*. London: University of London Press.

Cantor, N., & Mischel, W. (1979). Prototypicality and personality: Effects on free recall and personality impressions. *Journal of Research in Personality*, *13*, 187–205.

Clark, A., & Steer, R. (1996). Empirical status of the cognitive model of anxiety and depression. In P.M. Salkovskis (Ed.), *Frontiers of cognitive therapy* (pp. 75–96). New York: The Guilford Press.

De Boeck, P., & Rosenberg, S. (1988). Hierarchical classes: Model and data analysis. *Psychometrika*, *53*, 361–381.

Ellis, A. (1962). *Reason and emotion in psychotherapy.* New York: Lyle Stuart.

Ellis, A., & Grieger, R. (Eds.). (1986). *Handbook of rational-emotive therapy.* New York: Springer Publishing.

Favazza, A.R., & Simeon, D. (1995). Self-mutilation. In E. Hollander & D.J. Stein (Eds.), *Impulsivity and aggression* (pp. 185–200). Chichester: Wiley.

Feshbach, S., & Weiner, B. (1991). *Personality* (3rd ed.). Lexington, MA: Heath.

Hermans, H.J.M. (1974). *Waardegebieden en hun ontwikkeling* [Values areas and their development]. Amsterdam: Swets & Zeitlingen.

Herpertz, S. (1995). Self-injurious behavior: Psychopathological and nosological characteristics in subtypes of self-injurers. *Acta Psychiatrica Scandinavica*, *91*, 57–68.

Hollon, S.D., & Kendall, P.C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and Research*, *4*, 383–395.

Kelly, G.A. (1955). *The psychology of personal constructs.* New York: Norton.

Kiesler, D.J. (1996). *Contemporary interpersonal theory and research: Personality, psychopathology, and psychotherapy.* New York: Wiley.

Leahy, R.L. (1996). *Cognitive therapy: Basic principles and applications.* Northvale, [state?]: Jason Aronson.

Leary, T. (1957). *Interpersonal diagnosis of personality; a functional theory and methodology for personality evaluation.* New York: Ronald Press.

Lish, J.D., Kavoussi, R.J., & Coccaro, E.F. (1996). Aggressiveness. In C.G. Costello (Ed.), *Personality characteristics of the personality disordered* (pp. 24–46). New York: Wiley.

Magnusson, D. (1981). *Toward a psychology of personal constructs.* Hillsdale, NJ: Erlbaum.

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

Mischel, W. (1999). *Introduction to personality*.(6th ed.). Fort Worth: Harcourt Brace.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, *102*, 246–268.

Mischel, W., & Shoda, Y. (1998). Reconciling processing dynamics and personality dispositions. *Annual Review Psychology*, *49*, 229–258.

Morrison, E.F. (1990). Violent psychiatric inpatients in a public hospital. *Scholarly Inquiry for Nursing Practice*, *4*, 65–82.

Nisbett, R.E., & Wilson, T.D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, *84*, 231–259.

Osgood, C.E., & Suci, G.J. (1955). Factor analysis of meaning. *Journal of Experimental Psychology*, *50*, 325–338.

Pervin, L.A. (1976). A free-response description approach to the analysis of person-situation interaction. *Journal of Personality and Social Psychology*, *12*, 125–135.

Seligman, M.E., Abramson, L.Y., Semmel, A., & von Baeyer, C. (1979). Depressive attributional style. *Journal of Abnormal Psychology*, *88*, 242–247.

Shoda, Y., Mischel, W., & Wright, J.C. (1994). Intraindividual stability in the organization and patterning of behavior: Incorporating psychological situations into the idiographic analysis of personality. *Journal of Personality and Social Psychology*, *67*, 674–687.

Stein, J. (1992). Schemas in the cognitive and clinical sciences: An integrative construct. *Journal of Psychotherapy Integration*, *2*, 45–63.

Rosenzweig, S. (1944). An outline of frustration theory. In J.M. Hunt (Ed.), *Personality and the behavior disorders* (pp. 379–388). New York: Ronald Press.

Rosenzweig, S. (1976). Aggressive behavior and the Rosenzweig picture-frustration (P-F) study. *Journal of Clinical Psychology*, *32*, 885–891.

Rotter, J.B. (1954). *Social learning and clinical psychology.* New York: Prentice-Hall.

Spielberger, C. D., Sydeman, S.J. (1994). State-Trait Anxiety Inventory and State-Trait Anger Expression Inventory. In M.E. Maruisch (Ed.), *The use of psychological tests for treatment planning and outcome assessment* (pp. 292–321). Hillsdale, NJ: Erlbaum.

Tarrier, N., Wells, A., & Haddock, G. (Eds.). (1998). *Treating complex cases: The cognitive behavioral therapy approach.* Chichester: Wiley.

Vansteelandt, K., & Van Mechelen, I. (1998). Individual differences in situation-behavior profiles: A triple typology model. *Journal of Personality and Social Psychology*, *75*, 751–765.

Van Mechelen, I., & De Boeck, P. (1990). Projection of binary criterion into a model of hierarchical classes. *Psychometrika*, *55*, 677–694.

Wright, J.C., & Mischel, W. (1987). A conditional approach to dispositional constructs: The local predictability of social behavior. *Journal of Personality and Social Psychology*, *53*, 1159–1177.

Laurence Claes
Department of Psychology
Catholic University Leuven
Tiensestraat 102
B-3000 Leuven
Belgium
E-mail laurence.claes@psy.kuleuven.ac.be