On describing the residential care process: social interactions between care workers and children according to the Structural Analysis of Social Behavior (SASB) model

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2 Observing social interaction

2.1 Introduction

In daily life people observe the world around them. Observation is important in order to create a representation of reality. In behavioral sciences observation is an important method to acquire knowledge about human behavior in general, and about social interactions between human beings in particular. Contrary to its apparent simplicity, observation involves a series of complex processes. In this chapter observation is discussed, with an emphasis on systematic observation as a technique for data collection in behavioral research.

In paragraph 2.2 a definition of systematic observation is presented and the preliminaries crucial to observation are discussed. In order to measure human behavior, that is to qualify or quantify behavior into categories, a considerable number of systems to categorize human behavior have been developed. In paragraph 2.3 some important instruments for behavioral observation are shortly reviewed. The scope of the review is restricted to observational instruments for coding social interactions. One such instrument is called the *Structural Analysis of Social Behavior (SASB)*, developed by Benjamin (1974, 1987). This measurement system is applied in the present research project to code social interactions between residential child care workers and children in a Dutch residential treatment setting. Paragraph 2.4 describes the SASB model. An additional research question, related to the application of the SASB model as the measurement system in the present study, is presented in paragraph 2.5.

2.2 Observation

The term *observation* is not as univocal as it might seem, especially not when it is referred to as a scientific method to study behavior. Its connotations vary with different levels of abstraction, from the broad concept of field observation to the narrow concept of systematic observation. As Schneirla (1950) argues, no sharp line can be drawn between these concepts.

In field studies the term *observation* is used to denote a particular scientific research method (Van de Sande, 1986). In this case it refers to scientific research that uses the human observer as a measuring instrument and that is conducted to make explorative descriptions of social situations in a naturalistic context. Observational research incorporates several strategies, among other things: participant observation, subjective inquiry, ethnomethodology, and investigative reporting. The main characteristic of these observational research methods is that there is no data manipulation. This entails that the observer does not instigate the data (Weick, 1985; Swanborn, 1987).

Used in a narrower sense, the denotation of observation is restricted to a technique to collect data, which can be used in various research methods (Van de Sande, 1986). In the context of the present research project observation is considered as an approach to quantify human behavior in a systematic way. Systematic observation is defined below.
2.2.1 Defining systematic observation

As generally accepted, in behavioral science systematic observation is defined as making a reduced representation of reality, in such a way that specific aspects of this reality are quantified by a set of standard rules (Van de Sande, 1986).

The elements in this definition are explicated as follows:

- **Reduced**: Reality is complex. Observation implies selection and therefore simplification.
- **Representation**: The result of observation tells something about reality, but will never be exactly the same as reality.
- **Reality**: A vague concept that refers to the world around us and everything that occurs in it.
- **Aspects**: A human observer is only able to discern part of the world around him and in systematic observation this is an even more restricted segment.
- **By standard rules**: Each step in the process of systematic observation has to be clearly specified to make replication possible.
- **Quantifies**: The result of systematic observation is a statement with a quantifying character.

2.2.2 Preliminary work towards systematic observation

On the basis of an accurately formulated research question the researcher decides whether systematic observation is an appropriate procedure to collect data. As a result of the decision to make use of systematic observation an investigator has a number of interrelated decisions to make to design the study (Van de Sande, 1986; Martin & Bateson, 1993).

The first decision involves the degree of objectivity that can be attained. This has to do with the size of the unit of analysis: molecular behavioral units versus molar behavioral units. *Molecular* behavioral units are very small units (e.g., winking) that enlarge the accuracy and objectivity of the observation but result in very detailed data that need to be interpreted after the observation is done. In case of *molar* behavioral units (e.g., tantrum), the categories are more abstract and more encompassing and they implicate interpretation during observation which makes them more subjective.

The second decision concerns the type of data that are relevant to the research question. Behavioral observations yield a number of basic types of measure: frequency, duration, intensity, and focus of the behavior (Van de Sande, 1986). Martin and Bateson (1993) present latency instead of focus as one of the basic types of measure.

*Frequency* is the total number of occurrences of the behavior of interest. *Duration* is the length of time for which a single occurrence of the behavior of interest lasts. *Intensity* refers to the amplitude of the behavior of interest, for example the sound intensity of a vocalization, the intensity of a facial expression or the vigor of a social interaction. Other indices of intensity can be the local rate of an activity and some physical quantity related to the behavior of interest. By *focus* of the behavior is meant the person or the object the behavior of interest is directed at. *Latency* is the time from some specified event to the onset of the first occurrence of the behavior of interest.
Observing social interaction

The third choice involves the medium or physical means that are going to be used to record behavioral observations. One can observe and code the behavior of interest as it actually happens, which is called direct observation. In this case a correctly designed check sheet with different and discrete categories of behavior is a simple paper-and-pencil tool, which provides a cheap, flexible, and accurate way of recording the observations.

In case the behavior of interest is too complex or too fast to observe in real time a recording medium that makes it possible to slow down and to repeat the observations is required. This way of recording should provide a correct reproduction of the behavior without interpretation (Van de Sande, 1986). To achieve this, several recording mediums are available (Martin & Bateson, 1993). Film or video recordings give an exact visual record of the behavior, and exact records of vocalizations can be made with an audio tape-recorder. The advantage of film and video is that very fast or very complicated behavior can be analyzed repeatedly, in slow-motion, and in a detailed way. However, films and videotapes are restricted to visual and auditory information without context and have a restricted field of view and depth of focus because of the two-dimensionality. Also, film or video analysis can be very time consuming. A computer event recorder is a portable computer with appropriate software that enables the observer to record behavioral observations directly onto the machine via its keyboard. A computer event recorder is an appliance that can be used in direct observation as well as in postponed observation in case the behavior is recorded on paper, tape, or film. Transcriptions provide an exact reproduction of a conversation on paper, which can be reviewed as frequently as needed. A protocol is a verbal description of the behavior, as accurate as possible, recorded in de form of longhand written notes or dictated into a tape recorder. This form of behavioral recording needs interpretation, but is especially valuable during pilot observations and for recording rare events.

The fourth and probably the most important decision is the choice of the kind of behavior that is going to be observed. What sorts of behavior have to be described in order to answer the research questions in an adequate way? Martin and Bateson (1993) claim that there are three forms of description. The first form regards a description of the structure of the behavior of interest. The structure is the appearance or the physical form of the behavior. This results in a description of the behavior in terms of the subject’s posture and movements. An observer has to be aware of the fact that describing behavior by its structure can generate tremendous details that might be unnecessary and that might be difficult to interpret after the observation is done. The second form is a description of the consequences of the behavior of interest. In this respect consequences are the effects of someone’s behavior on the environment, on other individuals or on oneself. In such a description the reference to how the effects are achieved may be left out. It is important to use neutral terms for labeling the consequences of behavior patterns because danger exists that presumed consequences in retrospect turn out to be wrong. A third form of description is in terms of the individual’s spatial relationship to other individuals or to specified characteristics of the environment. In this case the emphasis is on where the subject is and with whom instead of on what the subject is doing.

For describing the right sorts of behavior it would be adequate to have a complete enumeration of all possible human behavior. Obviously such a taxonomy does not exist and therefore a certain classification is needed. A broad classification is in verbal versus nonverbal behavior. Verbal behavior is behavior that makes use of words or language.
Nonverbal behavior refers to all other behavior and can be subdivided into different categories: facial expressions, physical movements and gestures, eye movements, position, the in-between distance, touching, and nonverbal aspects of speech as intonation and loudness.

Irrespective of the kind of behavior that is going to be described, systematic observation involves the application of coding systems. It is inevitable to make use of a behavioral category system. Choosing categories is not a simple task. Behavior consists of a continuous stream of vocalizations and movements. This must be divided up into discrete units or categories suitable to the research questions. In general a behavioral category system should meet the following requirements. It should be exhaustive; that is, enough categories have to be used to describe every behavioral unit that is relevant with regard to the research questions. It should be exclusive; that is that no one behavioral unit fits into two or more categories. So each category should be precisely and unambiguously defined and all categories should be homogeneous, which means that all the behavioral units that will be included in the same category share the same properties.

In order to get the most appropriate category system an investigator can choose either to create a new coding system or to select one from existing systems.

The fifth decision relates to the selection of an appropriate recording. According to Martin and Bateson (1993) there are two levels of decisions that must be made: sampling rules and recording rules. Sampling rules specify which subjects to watch and when; alternatives are: ad libitum sampling, focal sampling, scan sampling, and behavior sampling. Recording rules specify how the behavior is recorded. Possibilities are continuous recording and time sampling.

The four different sampling rules concern the following. Ad libitum sampling means that the observer notes down whatever is visible and seems relevant, so that no systematic restrictions are explicated for what is recorded and when. This can be useful during pilot observations, or for recording rare but important events. Focal sampling means observing one, prior to the observation session determined, individual (or one dyad, or some other unit) for a specified amount of time and recording all instances of its behavior, usually with the help of a behavioral category system. It might be necessary to record certain aspects of the social behavior of other individuals around the focal individual, such as to whom behavior is directed to or who is the initiator of an interaction. Focal sampling is useful to study groups. In scan sampling a whole group of subjects is rapidly scanned, at regular intervals, and the behavior of each individual at that instant is recorded. This enables the observer to record only one or a few simple behavioral categories, for example which individual is asleep. A single scan may take from a few seconds to several minutes. The time each individual is watched may at best be short and roughly constant. Finally, in case of behavior sampling a whole group of subjects is observed and each occurrence of a particular type of behavior is recorded, together with details of which individuals were involved. This is useful for recording rare but important types of behavior, of which it is meaningful to record each occurrence.

The two basic types of recording rules, continuous recording and time sampling concern the following. Continuous recording means that each occurrence of the behavior is recorded, together with information about its time of occurrence. This provides an exact record of the behavior with true frequencies, duration, and times at which behavior started.
and stopped. In addition, continuous recording is a necessary strategy when there is an interest in analyzing sequences of behavior. Bakeman and Gottman (1986) refer to this recording rule as event recording. They describe event recording as a strategy in which the observer is continuously alert and in which the observer is stirred to record data whenever an event of interest occurs. Time sampling means that the behavior is sampled periodically and therefore an exact record of the behavior is not necessarily provided. The observation is split up into sample intervals (short successive periods of time) and several different categories of behavior are recorded simultaneously. This recording rule again can be subdivided into two types. The first regards instantaneous sampling and means that the observer on the instant of each sample point records whether the behavior of interest is occurring or not. This is necessary when scan sampling is applied. The second regards one-zero sampling and means that the observer on the instant of each sample point records whether or not the behavior of interest has occurred during the preceding sample interval. Note that continuous recording and time sampling can be used simultaneously for recording different kinds of behavior.

Making all the decisions to design a study on the basis of systematic observation is an interrelated process. Many decisions depend on the research questions: the choice for the kind of behavior (structure or consequences of behavior, spatial relationship, verbal or nonverbal behavior), the choice for the type of data (frequency, duration, intensity, focus, or latency), the choice between molecular or molar behavioral units, and the choice for the recording method (ad libitum sampling, focal sampling, scan sampling, behavior sampling, continuous recording, time sampling). The decision for the kinds of behavior that are going to be observed influences the choices for the types of data as well as the choice between molecular or molar behavioral units. Both the choice for either molecular or molar behavioral units as the choice for the type of data has consequences for the recording medium (direct observation, transcriptions, film or video recordings). In addition, the investigator has to take into account the practical and technical limitations of the setting and appliances. These might affect the choice for the recording medium, the choice between molecular or molar behavioral units, and the decisions for the recording method.

2.2.3 Reliability and validity

In order to carefully design an observational study for measuring behavior, two more issues are of major concern: reliability and validity.

Reliability

Reliability means that research results are, as much as possible, independent from factors that are subject to random influences and that generally are regarded as irrelevant variables. These concern the person of the researcher, time and circumstances of the measurement, and the specific measuring instrument used (Swanborn, 1996).

In order to check on the specific researchers in an observational study, observer agreement is determined. Observer agreement is expressed as interrater or between-observer reliability and as intrarater or within-observer reliability (Van de Sande, 1986; Martin &
Bateson, 1993). **Interrater reliability** deals with the extent to which two or more raters agree in their assignment of behaviors to levels within an ordinal or interval scale or to categories within a nominal scale. **Intrarater reliability** deals with the extent to which a coder agrees with him or herself when coding the same data at two different times. This requires recording of the observed behavior. In order to determine the degree of agreement the calculation of Cohen's kappa is recommended and generally accepted (Cohen, 1968; Hollenbeck, 1978; Popping, 1983).

A check on specific limitations regarding time and circumstances of the measurement implies collecting and analyzing data in different time periods, or using more than one sample, or using samples from more than one place, or using samples under different conditions and comparing the results. If the results remain the same, the label stability is used. **Stability** refers to the degree in which similar results are produced in repeated measurements. Both sets of data should highly correlate, which is generally determined by calculating some correlation coefficient (Van Peet, Van den Wittenboer & Hox, 1995; Swanborn, 1996).

For checking on the specific instrument that is used the label instrumental independency is adequate. If results remain the same with replication over instruments, these results are instrument-independent. This kind of replication usually deals with the degree in which different parts of a measurement system, usually some (sets of) items that serve as mini-instruments, correlate with each other. In order to determine this correlation of what is called **internal consistency**, Cronbach's alpha is calculated (Van Peet et al., 1995; Swanborn, 1996).

**Validity**

Validity refers to the idea that research conclusions are independent from factors that are subject to systematic influences that generally are regarded as irrelevant. Especially where research conclusions are based on argumentation and interpretation, the validity is at stake (Swanborn, 1996).

The concept of **internal validity** refers to the extent to which the system or scale measures what it purports to measure (Cronbach, 1980), or in a narrower sense it refers to the validity with which is inferred that a relationship between two variables is causal (Campbell & Stanley, 1963). According to the American Psychological Association (1974) the central types of internal validity are construct, content, and predictive validity. **Construct validity** requires that research findings, expressed in operational language, can be generalized to relations on a theoretical level. **Content validity** refers to the extent to which the items of a scale or measure conform to which it is intended to measure. **Predictive validity** refers to the extent to which a theory or instrument can be used to successfully predict findings.

Besides internal validity the concept of external validity is a relevant criterion. **External validity** refers to the question whether obtained research results are generalizable to other populations, places and points in time.
2.3 Instruments for observational measurement

An investigator who is going to make use of systematic observation is faced with either the task of developing a new observational instrument or comparing existing instruments in order to select the most appropriate one. The development of a psychometrically sound observational system usually requires many years of data collection, analysis, and revision. The comparison of existing systems is less time-consuming. However, a considerable number of coding systems exists and the amount of published information about them is limited. Instruments for observational measurement vary in many ways, such as scope, theoretical derivation, exhaustiveness, exclusiveness, amount of reference required, size of coding unit, administrative procedures, psychometric properties, setting of observation and training required of coders (Simon & Boyer, 1974; Weick, 1985; Grotevant & Carlson, 1987). Consequently, they differ in their suitability for specific research or clinical questions. No standard framework for comparison of existing observational systems is available, though many evaluation criteria have been suggested. Only a few review articles have been published.

In order to present an outline of the many existing instruments for observational measurement, two main selection criteria are relevant with respect to the range of the present study: observational systems that are developed to describe a treatment or care process and observational systems that are developed to code social interactions. In order to be relevant for this study, instruments to describe a treatment process have to take therapeutic interactions into account, and instruments to measure social interactions have to be applicable to a treatment situation.

Furthermore, observational instruments originate from various fields of research traditions. In the scope of the present research project the most prominent are the field of normal family and parent-child interaction, the field of family therapy process research, and the larger field of social interaction or small group analysis. In the following section observational instruments that are developed in these three fields of research will be reviewed. Systems that are designed to code social interaction and systems that can be applied to describe a treatment process are taken into account. This short review is not meant to be comprehensive. The most important interaction coding systems will be described in terms of their scope, theoretical foundations, dimensions and categories, and some major aspects of their reliability and validity.

2.3.1 Interaction coding systems

In selecting interactional coding systems it is effective to evaluate them with respect to the following three general methodological principles, suggested by Pinsof (1989) and Florsheim (1992).

The first methodological principle regards the specificity of a coding system. This involves the ability of the categories of a coding system to capture detailed aspects of an interaction. In this respect the following issues should be considered. First, which and how many dimensions are included in the coding system? Coding systems may include an
enormous amount of variables across several dimensions, or only measure a few carefully selected variables. Large scale coding systems operationalize many dimensions of behavior. On the one hand these are comprehensive and capture lots of information. On the other hand these tend to be more complex and less easy to use, and may lack a clear conceptual distinction between the dimensions. Secondly, what is the amount of inference required from the coder? Quantitative measures minimize the amount of inference. They help to objectify the coding process and improve interrater reliability, but they produce detailed data without a contextualized meaning that are difficult to interpret. Qualitative measures tend to be more abstract and require more inference. It is more difficult to reach interrater reliability with qualitative measures, but they may be better able to capture the contextual meaning of behavior. Thirdly, in what way is interactive behavior segmented into units of observation? A 45 minutes’ speech addressed to an audience can be used as one coding unit. However, most frequently each meaningful utterance or each complete thought is used as the coding unit. Another method is to use time-based intervals.

The second methodological principle concerns the universal applicability of the coding systems. Nonuniversal coding systems are for use in a particular population or setting, which implies that they are not very versatile. Universal coding systems consist of universal dimensions or categories that preserve their construct validity irrespective of the population or the context they are applied to. Universal measures are widely applicable, they are able to compare different groups and they are helpful in facilitating communication between researchers.

The third methodological principle regards the distinction between evaluative and descriptive measures of behavior. In evaluative coding systems a priori judgements are built into the decision rules about the pathological character of an interaction. In descriptive coding systems no such a priori judgements are built into the decision rules. Descriptive systems can have a range of positive and negative codes, but no presumptions are made about whether such behavior in itself is healthy or pathological.

In the field of normal family and parent-child interaction many interaction coding systems have been designed as research tools. Most of them are developed to study interactional patterns related to the normal and psychopathological development of children or of the family as a whole.

Grotevant and Carlson (1987) reviewed family interaction coding systems. They selected observational coding systems that involve the verbal interaction of the family with school-aged children and adolescents in at least a triadic situation. Some of them have quite a narrow focus, which restricts their applicability to very specific research questions. For example, the Family Conflict and Dominance Code (FCDC), which in its final version was developed by Henggler and Tavorima in 1980, is specifically directed at the distribution of power and the prevalence of conflict in families. The Affective Style Measure (ASM), which was developed by Doane in 1981, only measures the affective quality of communication of parents. The Parent Adolescent Interaction Coding System (PAICS) was developed by Robin and Fox in 1979 to study verbal behaviors of parents and adolescents, but only as they attempt to solve their problems. The Family Constraining and Enabling Coding System (FCECS), designed by Hauser et al. in 1983, and the Developmental Environments Coding System (DECS), designed by Powers in 1982, are focused on aspects of family process that can constrain and that can enable or stimulate adolescent individuation and ego development.
Also the Interaction Process Coding System (IPCS) from Bell et al., developed in 1982, and the Family Discourse Code (FDC) from Condon et al., developed in 1984, are focused on measuring the processes of individuation in family relationships. In addition, Moos and Moos (1981) developed a system that specifically is focused on the climate in the family, the Family Environment Scale (FES).

Family interaction coding systems that according to Grotevant and Carlson (1987) and Florsheim (1992) could be applied to encompass a treatment process are described below.

- **Family Interaction Coding System (FICS)**
  The FICS was developed by Patterson et al. in 1969 to measure aversive or aggressive and prosocial behavior of parents of children within a field setting. It was developed to provide an assessment tool for changes in family interaction resulting from intervention. The FICS is based on social learning theory in that coercive behavior in parents is thought to elicit antisocial behavior in children and prosocial behavior in parents will elicit prosocial behavior in children. The system consists of two dimensions divided into 29 categories: aversive behaviors, for example cry, humiliate, destructiveness, whine and prosocial behaviors, for example compliance, talk, receive, physical positive. The FICS uses a time-based method of segmentation. Every six seconds a unit of behavior is coded for each person being observed. The observations are conducted life. The coding system is explicitly evaluative because aversive behavior is regarded as less healthy than prosocial behavior. This distinction between aversive and prosocial behavior probably is universal and therefore universally applicable. Yet the definitions of both dimensions vary from one context to another, so the codes themselves are not universally applicable. For interrater reliability correlation coefficients from .59 to 1.00 are reported. Construct validity has been established by obtaining positive correlations with an alternative measure of family coercion.

- **Defensive and Supportive Communication Interaction System (DSC)**
  The DSC was developed by Alexander in 1973 to measure defensive and supportive communication in family interaction. The frequency and reciprocity of these communications are considered as indicators of family adaptiveness. Theoretically it is derived from Bales (1951) small group analysis and from family systems theory, which is focused on patterns of interaction between family members rather than on the isolated behavior of individual family members. It is designed to complement Alexander’s therapist coding system that consists of eight five-point scales for rating the following verbal and nonverbal aspects of family therapist behavior: affect, humor, warmth, directiveness, self-confidence, self-disclosure, blaming, and clarity. The DSC consists of two dimensions divided into eight behavior types: the construct of defensiveness is represented by the behaviors judgmental-dogmatism, control strategy, indifference, and superiority; the construct of supportiveness is represented by the behaviors genuine information seeking/giving, spontaneous problem solving, empathic understanding, and equality. The system uses a time-based method of segmentation. Every ten seconds a unit of behavior is coded for each family member. Two videotaped or audiotaped family discussions are used to obtain the observation data. The coding system is evaluative since supportive behavior is regarded as healthy communication that decreases anxiety and stimulates positive interaction whereas defensive behavior is regarded as threatening or punishing. Because the definitions of both dimensions vary from one context to another the behavior types are not universally
applicable. For interrater reliability 81 to 94 percent agreement is reported. With respect to its discriminant validity it has been demonstrated that the DSC differentiated between delinquent and nondelinquent adolescent families.

- **Structural Analysis of Social Behavior (SASB)**
  The SASB was developed by Benjamin (1973, 1974) to measure social interactions or interpersonal behavior and intrapsychic behavior. It is derived from Leary's Interpersonal Circle and from Schaefer's model for parenting behavior. It is based on the object relations theory from Sullivan, and it is compatible with the communication theory from Watzlawick. The SASB classifies social interactions and intrapsychic events in terms of three underlying dimensions that are proposed to form the basic structure of social behavior: focus (the direction of an interaction, which can be focus on other, on self, or introject), affiliation (a continuum rating on a horizontal axis) and interdependence (a continuum rating on a vertical axis). The full SASB diagram consists of three diamond shaped surfaces that each reflect a focus, and that in total describe 108 behaviors. The other surface identifies 36 parentlike behaviors, for example protect, friendly listen, ignore, punish, and control. The self surface identifies 36 childlike behaviors, for example learn from, joyful approach, openly disclose, assert, wall off, and sulk. The introject surface identifies 36 intrapsychic behaviors, for example analyze self, enjoy self, listen to inner self, neglect own potential, and put self down. In order to develop a less complex version of the model, the 36 behaviors of each surface were collapsed into eight psychometrically validated clusters, resulting in the so-called *cluster version*, with in total 24 clusters of social behaviors.

  The unit of analysis for both the full version as the cluster version of the SASB model is each complete thought or each psychological meaningful verbal or nonverbal interaction of every participant of the interaction. Videotapes plus transcripts are used to obtain the observation data. The SASB is highly descriptive and because of the universality of its underlying dimensions the SASB is universally applicable. For interrater reliability on the full SASB model weighted Cohen's kappas from .62 to .79 are reported (Benjamin, Giat & Estroff, 1981). For ratings on the SASB cluster version Cohen's kappas up to .94 are reported (Junkert, 1993). Construct validity has been tested and established by techniques of factor analysis, autocorrelational analysis, and a dimensional ratings procedure (Benjamin, 1974).

- **The Family Task (FT)**
  The FT was developed by Rosman and Minuchin in 1978 to measure family interaction patterns. It is based on structural family theory. The FT consists of five structural constructs: transactional style, enmeshment, alliance, conflict, and protectiveness. Each construct includes several subcategories of behavior. This coding system is applied to five tasks for eliciting family interaction, including planning a menu, discussing a family argument, describing pleasing and displeasing qualities of family members, making up stories about family pictures, and putting together colorforms designs. For each of these five family tasks different codes are utilized, which makes the coding rather complex. As the coding unit each speech of each family member is used. Videotapes plus transcripts are used to obtain the observation data. Since additional details regarding the subcategories of behavior are unpublished it is unclear whether the codes are universally applicable or not. No information on interrater reliability is reported. It is presumed that the FT differentiates among psychosomatic family types.
In the field of family therapy process research researchers explicitly have taken the effort to develop coding systems that focus on the explanation of the treatment process. The most important coding systems in this field are reviewed by Pinsof (1981). He concluded that in a substantial number of observational studies on the process of therapy two separate systems have been applied to describe and analyze the behavior of the therapist and the family members. This implies that different systems or different categories for the therapists and the clients have been developed. Systems for coding the family therapist behavior are more complex and differentiated and focus primarily on verbal behavior. One example is Pinsof’s Family Therapist Coding System (FTCS), designed in 1979 to study therapists from a variety of theoretical orientations. It is focused on distinct aspects of the therapist’s intervention, such as topic, to whom, and route. Systems for coding the family (patient) members are for example Gutmann’s Emergency/Neutral/Welfare system, designed in 1972 to study the underlying affective content of family member's verbal statements and Heckel’s two-scale system, designed in 1972 to analyze the in-therapy verbal behaviors of group therapy patients.

Of all the therapist and patient systems selected by Pinsof (1981) only one explicitly takes the interactions between the therapist and the family members into account. This system is described below.

• Allred Interaction Analysis for Counselors (AIAC)
The AIAC was developed by Allred and Kersey in 1977 to analyze in-therapy verbal behavior of counselors and clients in family and marriage counseling. Theoretically it is derived from the individual psychology of Adler. The AIAC consists of ten code categories. Seven categories focus on the therapist’s verbal behavior: educates, gathers information, interprets/confronts, seeks alternatives/recommends, supports, equivocates, and detaches. Two categories focus on the client’s verbal behavior: works and resists. One category characterizes the interaction between the participants: confusion or silence. The system uses a time-based method of segmentation. Every three seconds the counseling interaction is rated. The coding system is evaluative since some categories are regarded as functional and others as obstructive. Since the definitions of the categories vary from one context to another the system is not universally applicable. A mean interrater reliability score of .90 is reported. Only concurrent validity has been assessed and the results are reported as being not impressive, since no relationship was found with personality measures or other skills measures.

In the field of family therapy process research only a few researches have developed systems that apply the same categories to the behavior of the therapist and clients (Pinsof, 1981). Scheflen (1966) and Benjamin (1974) both designed coding systems that are more than family therapy coding systems. They are developed to analyze social interaction in general and have been applied to the process of family therapy. Benjamin’s model has been described above; Scheflen’s system will be described below.

• Context Analytic Approach (CAA) The CAA was developed by Scheflen in 1966 to get back to the study of behavior itself by providing a detailed description of every discernible behavior of every individual within a group during interaction. It is an ethnographic approach and it is derived from the
communication theory of Bateson and the cybernetics of Wiener. The AAC is not a constitution of fixed behavioral categories. The nominal categories can change with different participants or with different interaction, because each interaction generates the terms or categories of its own analysis. The AAC is a method of analysis that starts with examining the relations of one behavior to another and these to a third until all of the behavioral elements that constitute a single and defined subsystem of behavior are identified. Unitization is conducted on the basis of postural shift or positions. Integrating and adding together positions derives interactional patterns or structures, particular to the participants. The result is a description in categories of the positions that the participants assume during the interaction, for example, 1) explain, 2) passive protesting, 3) listening, and 4) intervention. The CAA is entirely descriptive and universally applicable. No details about interrater reliability and validity are published.

In the larger field of social interaction or small group interaction by means of systematic observation the most widely used interaction coding system is the Interaction Process Analysis of Bales (1951, 1970). This system often is used to study psychotherapy.

- **Interaction Process Analysis (IPA)**
The IPA was developed by Bales in 1950 and slightly altered in 1970 to analyze social interactions in small groups or group dynamics. This coding system consists of 12 categories reflecting four aspects of verbal behavior in a small group. The categories shows solidarity, shows tension release, and agrees reflect positive actions. The categories gives suggestion, gives opinion, and gives orientation or information reflect attempted answers. The categories asks for orientation, asks for opinion and asks for suggestion reflect questions. The categories disagrees, shows tension, and shows antagonism reflect negative actions. Nonverbal behavior is helpful in classifying the verbal behavior. The coding unit is the smallest discernible and meaningful segment of verbal or nonverbal behavior of one person, and can be a whole speech, a sentence, or a part of a sentence. The IPA is highly descriptive and it is universally applicable. The IPA is developed for direct observation. The task for an observer is not a simple one, since he has to observe the behavior of several people simultaneously. The behavior needs to be unitized and classified in categories. In order to reach high interrater reliability a considerable amount of training is required.

### 2.3.2 Measures to encompass the care process in residential settings

As stated at the beginning of this paragraph, observational systems that are relevant for the aim of the present study concern instruments that are developed in order to measure a treatment process and take therapeutic interactions into account, or instruments for measuring social interactions in a treatment situation. So far no instruments are discussed that specifically are developed in order to describe residential treatment or the residential care process. Some important instruments that are used in the Dutch research field on residential child care are shortly described below.

Measurement systems that focus on the residential care process mostly concern outcome evaluation instruments (e.g., Mesman Schultz & Nelen, 1986) and not process evaluation
instruments. As described in paragraph 1.5, in the field of residential child and youth care in the Netherlands only a few process evaluation studies have been carried out that focused on the description of the treatment or care process. In these studies two major kinds of measurement systems have been used: interviews or self report measures and observational measures. Interviews or self report measures are filled out by the participants to the treatment process and explicate the perceptions of the actual participants on the treatment process. These are beyond the scope of the present study. Observational measures involve the application of coding systems or rating scales by trained coders to transcripts or video or audio tapes of the treatment. Rating scales are considered as another instance of systematic observation (Bakeman & Gottman, 1986). These instruments aim at the intersubjective or observational reality of the treatment process.

Three most prominent observation measures and rating scales used to describe the residential care process are shortly mentioned.

De Ruyter (1971) developed his own observational system to describe social interactions between residential care workers and children. He introduced the concept of environmental force units. These units concern periods of time in which a care worker and a child are interacting and talk about one single subject, issue or problem. Duration of these environmental force units was measured. With respect to the process of an interaction De Ruyter described who initiated the interaction, the care worker or the child. He developed different categories for child behaviors and for the behaviors of care workers. The categories for child behaviors are separated in social behaviors and activities. Social behaviors are for example a friendly action towards the care worker, a hostile action towards the care worker, or towards other children. Activities concern for example doing nothing, screaming, playing, or reading. Categories for the care workers concern on the one hand behaviors as a reaction to child behaviors, like rewarding, helping, restricting, warning, and punishing, and on the other hand initiative behaviors, like directing, advising, and inviting.

Melsce (1986) developed rating scales in order to describe the intentions or motivations and the actual activities or performance of the residential care workers. Intentions are divided up in intentions with respect to the situation, the group and the individual child. Care workers can indicate the degree in which they are focussed on all these intentions, by rating each intention on a 5-point scale. The activities are restricted to activities for shaping the actual situations in the residential living units. Activities or performances can be directed at providing a good atmosphere or at providing structure. Care workers have to rate whether they performed adequately or not on a 5-point scale.

More recently, Verstegen and Lodewijks (1993) presented their so-called interaction indicator. This model is strongly based on Leary's Interpersonal Circle. It is based on two dimensions. The first dimension concerns affiliation and is characterized as together versus against (each other). This dimension is described on a horizontal axes. The second dimension concerns dominance and is characterized as above versus under. It is described on a vertical axes. By combining these two dimensions four quadrants arise. Verstegen and Lodewijks divided each quadrant in two, with the result that now eight interactional positions can be described. These octants are named as follows: Above-Together or To give advice and guidance, Together-Above or To nurture, Together-Under or To follow, Under-Together or To await, Under-Against or To withdraw, Against-Under or To be opposed to, Against-Above or To fight for, and Above-Against or To win.
2.4 Benjamin’s SASB model

The observational measurement system that in the present research project is applied to code the social interactions between child care workers and children in a residential treatment setting is the Structural Analysis of Social Behavior (SASB) of Benjamin (1974, 1987). The reasons that underlie this choice are explained below.

On the basis of the central research question of the present study, an appropriate observational instrument has to meet at least the following requirements. The observational system has to be developed to code social interactions. It should not have a narrow focus, since the research question is not limited to specified elements of the social interactions in the residential living units. In addition, the coding system has to be applicable to describe a treatment process. This implies that it has to contain the possibility to analyze behavior of adults who offer treatment or care as well as behavior of children who receive treatment or care.

The SASB model meets all these criteria. It is recognized as a powerful system, both to describe social interactions (Weick, 1985; Grotevant & Carlson, 1987) and to describe a treatment process (Pinsof, 1981; Alpher, 1988). Since it is built on universal dimensions that are held as basic dimensions for the structure of social behavior, the SASB is extremely versatile. Its applicability is not restricted to a specific theoretical orientation, a specific setting, a specific population or a specific research question. Furthermore, the SASB seems to be a coding system that captures reduced information that is detailed and sophisticated enough to reflect the complexity of human interaction without producing an infinite amount of data. Referring to the setting the SASB will be applied to in the present study, it is important that this coding system takes both parentlike and childlike behavior into account and that it includes both verbal and nonverbal behavior.

A special note is made here to the reasons why none of the instruments used in earlier Dutch research was chosen in the present study to describe the residential care process. The system of De Ruyter (1971) is based on environmental force units, which are defined by the fact that within one such environmental force unit there is talked about one single subject. In the present study the content of the interactions is left outside of consideration.

The value of the system of Melse (1986) is that it provides a useful language for thinking and talking about interactions in the residential living unit. But since it is developed as rating scales, it is hard to apply it as an observational system, especially because intentions have to be rated.

Finally, like the SASB model also the interaction indicator of Verstegen and Lodewijks (1993) is based on the Leary’s Interpersonal Circle. However, the SASB model combines the concepts of Leary’s model with those of another model, namely Schaefer’s model of parental behavior. Therefore, the SASB model is better capable of describing the full richness of social behavior, as will be clarified in the next section.

2.4.1 Origin of the SASB

De SASB was designed in de sixties by Professor Lorna Smith Benjamin, firstly at the University of Wisconsin and later on at the University of Utah. The first version of the SASB

The idea behind the development of the SASB was an assumption that is the basis of behavioral science in general, namely that primate behavior, including social interactions between human beings, is orderly and lawful (Benjamin, 1974). A considerable number of studies have been carried out in order to explicate basic structures that regulate and organize human social interactions or interpersonal behavior. In spite of various samples (normal subjects, psychiatric subjects, parents, families, and students), various measurement systems, and various theoretical assumptions, results are unambiguous. Over and over again the same two factors bind the major proportion of the variance, that is the factor dominate/submit and the factor affiliation/disaffiliation (Grawe-Gerber, 1993). Therefore, these factors are proposed as basic dimensions for the structure of social behavior.

By means of correlational analysis Freedman, Leary, Ossorio, and Coffey (1951) discovered that behavioral categories create a circle if they are put in a certain order. The circular arrangement of categories or classifications is meant to imply that categories that are close to one another on the circle are more corresponding then those that are more widely separated from one another. Adjacent categories have high positive correlations; categories 90 degrees apart have no correlation; and categories 180 degrees apart have high negative correlations. Guttman (1954) introduced the term circumplex for models that represent such a circular ordering. In a circumplex model latent variables give rise to this observed circular ordering. Most commonly, theorists speak of affiliation and dominance or power as the two components that are responsible for the circular ordering in circumplex models that describe interpersonal behavior. The dimension affiliation is attached to the horizontal axis of the circle and the dimension power is attached to the vertical axes of the circle. Each of the interpersonal variables on the circle represents a particular blend of affiliation and power (Wiggins, 1982).

The SASB model is an elaboration of two important circumplex models of interpersonal behavior, that is the Interpersonal Circle (IPC) by Leary (1957) and the model for parenting behavior by Schaefer (1965). The horizontal axis of both Leary’s model as Schaefer’s model represent the dimension affiliation with the poles love and hate. Analogously, the horizontal axis of the SASB models is named affiliation and defined by the poles love and hate.

The vertical axis of Leary’s model as well as of Schaefer’s model represent the power dimension. Also Benjamin wanted the vertical axes of her model to represent the power dimension. However, different interpretations are placed upon this power dimension in the two models of Leary and Schaefer. This stems in part from the fact that Schaefer’s model was meant to apply to parental behavior that is by definition active in nature (Wiggins, 1982). In Leary’s model the vertical dimension is defined by the oppositional points dominate and submit, whereas Schaefer puts autonomy as the opposite pole of control (see table 2). Benjamin attempted to solve this discrepancy between Leary’s and Schaefer’s conceptualizations of the power dimension. She considered autonomy to be the opposite of control or dominance and submission to be the complement of control or dominance. Benjamin states that if one person is dominant and the other is submissive, they are in a harmonious, not in an opposing relationship. In order to accomplish this in her SASB model, Benjamin introduced the concept of focus (Benjamin, 1974).
TABLE 2:
Definition of the poles of the vertical interdependence dimension in the models of Leary, Schaefer, and Benjamin.

<table>
<thead>
<tr>
<th></th>
<th>Leary</th>
<th>Schaefer</th>
<th>Benjamin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>dominate</td>
<td>autonomy</td>
<td>give autonomy</td>
</tr>
<tr>
<td></td>
<td>submit</td>
<td>control</td>
<td>control</td>
</tr>
</tbody>
</table>

The concept of focus in the SASB model defines the direction of a social interaction and is distinguished in focus on other or focus on self. Focus on other reflects active behaviors that are directed towards another person. In this case the vertical dimension is defined by the poles control and give autonomy (see table 2). A person can control another person or give another person autonomy. Focus on self reflects reactive behaviors with the emphasis on what is happening to oneself. In this case the vertical dimension is defined by the poles submit and be separate (see table 2). A person can submit him or herself in reaction to another person or assert oneself from another person. Benjamin called the vertical dimension the dimension of interdependence.

Besides focus on other or focus on self the SASB model distinguishes a third type of focus, that is focus introject. Focus introject reflects intrapsychic behaviors directed inward upon oneself. The concept of introjection is based on the interpersonal theory of Harry Stack Sullivan (1953), the famous psychiatrist of the object relation dynamic school. He suggests that human beings treat themselves in the way that important other people have treated them during their development. The self concept is grounded in these appraisals of significant others during development. Sullivan marked the connections between a person's adult personality and the person's perceptions of early social educational experiences. According to Sullivan there is a distinction between how the world really is versus how a person perceives it. Predictions about behavior would be more accurate if how the person sees the world is taken into account.

Finally, the SASB is compatible with the communication theory developed by Watzlawick, Beavin, and Jackson (1967). In their interactional view there is an emphasis on the relation of specific interpersonal behaviors to the interactional sequences in which they are embedded. Communication not only contains verbal information about some subject, but also information that defines the relationship between the participants of an interaction. Verbal information refers to the literal meaning of the words. Information about the relationship between the participants of an interaction can not only be inferred from verbal aspects of a message but especially from the nonverbal aspects of a message.

2.4.2 Structure of the SASB model

The SASB model is presented in figure 1. As its starting point is constituted by two dimensions, affiliation and interdependence, it is essentially a two-dimensional configuration (Benjamin, 1973, 1974, 1979a). Starting from the origin, let x be a rating on the affiliation
### Observing Social Interaction

#### Interpersonal

- **Uncaringly let go**
- **Ignore, pretend not there**
- **Neglect interests, needs**
- **Illogical initiation**
- **Abandon, leave in lurch**
- **Starve, cut out**
- **Angry, dismiss, reject**
- **Approach menacingly**
- **Rip off, drain**
- **Punish, take revenge**
- **Deceive, divert, mislead**
- **Accuse, blame**
- **Put down, act superior**
- **Intrude, block, restrict**
- **Enforce conformity**

#### Focus on OTHER

- **Endorse freedom**
- **Clarify, fairly consider**
- **Show empathic understanding**
- **Confirm as OK as is**
- **Stroke, soothe, calm**
- **Warmly welcome**
- **Tender sexuality**
- **Encourage separate identity**
- **Carefully, fairly consider**
- **Friendly invite**
- **Provide for, nurture**
- **Sensible analysis**
- **Constructive stimulate**
- **Pamper, overdulge**
- **Benevolent monitor, remind**
- **Encourage separate identity**
- **Freely come and go**

#### Focus on SELF

- **Allow separate way**
- **Defy, do opposite**
- **Busy with own thing**
- **Wall-off, nondisclose**
- **Noncontingent reaction**
- **Detach, weep alone**
- **Refuse assistance, care**
- **Flee, escape, withdraw**
- **Desperate protest**
- **Wary, fearful**
- **Sacrifice greatly**
- **Whine, defend, justify**
- **Uncomprehending agree**
- **Appease, scurry**
- **Sulk, act put upon**
- **Apathetic compliance**
- **Follow rules, proper**
- **Yield, submit, give in**

#### Intrapsychic

- **Happy-go-lucky**
- **Drift with the moment**
- **Neglect options**
- **Fantasy, dream**
- **Neglect own potential**
- **Undefined, unknown self**
- **Ignore own basic needs**
- **Reject, dismiss self**
- **Torture, annihilate self**
- **Menace to self**
- **Drain, overburden self**
- **Vengeful self punish**
- **Guilty, blame, bad self**
- **Doubt, put self down**
- **Restrain, hold back self**
- **Force propriety**

#### Focus INTOJECT

- **Soak best for self**
- **Nurture, restore self**
- **Protect self**
- **Examine, analyze self**
- **Practice, become accomplished**
- **Self pamper, indulge**
- **Benevolent eye on self**
- **Force ideal identity**

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On describing the residential care process

dimension and let \( y \) be a rating on the interdependence dimension. By using the assumption of \( x^2 + y^2 = c \) (\( c \) is a constant), the two-dimensional configuration is reduced to a circle, which facilitates the use of the circumplex logic and language. The SASB model conforms to this logic, except that Benjamin used the absolute values of the proportional scores on the underlying dimensions rather than the squares. Thus she used the assumption of \( |x| + |y| = 1 \), which results in the edges of a diamond-shape. According to Benjamin (1974) a conceptual advantage of a diamond-shape is that the poles of the dimensions are more salient and eye-catching. Note that where in the following the term ‘surface’ is used, this refers only to points on the edges of the diamond.

In order to construct the SASB model, data were used that have been obtained through a series of questionnaires (Benjamin, 1974, 1984, 1988). Benjamin developed questionnaires that involve ratings about a person’s relationship with a significant other person, with mother, with father, and also about a person’s relationship to the self. Items are worded in concrete behavioral terms and require no sophisticated reasoning for interpretation. The questionnaires are self-report instruments, and therefore are ratings of perceptions, structured in a true/false format. For each relationship the rater indicates for each item the degree of agreement or disagreement on an interval scale, ranging from 0-100 in 10-points intervals, and with 50 defined as the boundary between true and false. Ratings are interpreted as measuring the subject’s view of his or her relations with significant others in both his or her present and his or her past. By means of computing correlations between the ratings on the items of the questionnaire, the items were put in a circular ordering, which is a closed continuum. The items have been generated and selected in a multistep and frequently repeated process, ending in the final classifications of social interactions on the SASB model.

**Focus**

Each SASB surface represents a type of focus, respectively focus on other, focus on self, and focus introject. Each type of focus is symbolized by a so-called stick figure in figure 2 and is specified as follows (Benjamin, 1974; Grawe-Gerber & Benjamin, 1989).

Focus on other (focus 1) describes interpersonal behaviors on surface 1 of the SASB model. These involve active behaviors, which are concerned with *what is going to be done to, for or about the other person*. If a person X relates to person Y the focus of X is on other in case X directs a transitive action towards Y. The emphasis is on what is happening to Y. These behaviors are defined as being prototypically characteristic for adults or parents.

Focus on self (focus 2) describes interpersonal behaviors on SASB surface 2. These mostly involve reactive behaviors, which are concerned with *what is going to be done to, for or about the self*. If a person X relates to person Y the focus of X is on self in case X is in an intransitive state in reaction to Y. This concept of intransitivity involves a differentiated expression of the state of the self. The emphasis is on what is happening to X. These behaviors are defined as being prototypically characteristic for children.

Focus introject (focus 3) describes intrapsychic behaviors on surface 3 of the model. These involve behaviors in which X directs a transitive action inward upon him or herself, which are internal or covert behaviors.
Focus introject is distinguished from focus on self in that introjections are active intrapsychic actions turned inward upon the self, whereas focus on self represents interpersonal behavior as a consequence of an action of another person.

![Focus, Other, Self, Introject Diagram](image)

**FIGURE 2:** The three dimensions of the SASB model that are proposed to form the basic structure of social behavior. Focus is symbolized by the stick figures. Affiliation is represented by the 19-point horizontal scale. Interdependence is represented by the 19-point vertical scales, with different anchor points depending on focus. Adapted from: Benjamin, L.S. (1986). Adding social and intrapsychic descriptors to axis I of DSM-III. In T. Millon and G.L. Klerman (Eds.), *Contemporary directions in psychopathology*. New York: Guilford Press. © 1986 by the Guilford Press. Reprinted by permission.

Note that no one focus can be seen as the most important focus, and that there is no need for active focus on other behaviors always to precede reactive focus on self behaviors. A person can initiate an interaction with interpersonal behavior with focus on self. Furthermore, the prototypic names adultlike or parentlike and childlike do not imply rigidity of role (Benjamin, 1974). Every person can show behavior on each surface. Adults can show behavior with focus on self and children can show behavior with focus on other. However, adults will show more focus on other behavior, whereas children will show more focus on
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self behavior. This imbalance of focus is appropriate and defined by role. Another example of this role-defined imbalance of focus is that a therapist should focus more on the patient, and consequently show more focus on other behavior, whereas the patients should show more focus on self behavior. In an ideal relationship between two adults, focus is well balanced with equal amounts of focus on other and focus on self behavior (Benjamin, 1984).

The horizontal and vertical dimensions

Each surface is shaped by a horizontal and a vertical axis, each of which represent one of the two dimensions that are proposed as basic dimensions to represent social behavior.

The horizontal axis of all three surfaces represents the dimension affiliation and is a 19-point rating scale from -9 hostile to +9 friendly. It refers to the affective relationship between the two participants of an interaction. A code of 0 means that no friendliness or hostility can be identified and that the interaction is neutral.

The vertical axis of all three surfaces represents the dimension interdependence, and is a 19-point rating scale from -9 to +9 as well. The names for the poles on the vertical axis depend on the focus. On focus other the poles are called control (-9) versus give autonomy (+9), on focus self the poles are labeled submit (-9) versus be separate (+9), and on focus introject the poles are named self-control (-9) versus let self be (+9).

The poles of the axes reflect behaviors that are ‘primitive basic issues’. For example, the poles of the horizontal axes on surface 1 are extreme disaffiliation involving attack or murder and extreme affiliation involving intense love or sexuality. Benjamin (1974) wanted to be these primitive behaviors salient and eye-catching in her model, which she reached by presenting the model in the shape of diamonds.

The right side of each surface identifies varying degrees of friendly behavior and the left side identifies varying degrees of hostile behavior. On the upper half of each surface behaviors involving various degrees of independence and differentiation are shown, whereas each lower half shows behaviors involving various degrees of enmeshment.

Three versions of the SASB model

Benjamin created three different versions of the SASB model with varying levels of complexity: the full model, the cluster model, and the quadrant model.

The full model, as presented in figure 1, is the most complex version. In this full version each diamond contains 36 points or classifications that describe interpersonal behavior. Each point is the result of a rating (-9 to +9) at the horizontal (affiliation) dimension and a rating (-9 to +9) at the vertical (interdependence) dimension. By means of a vector from the origin through this point till it intersects with the edge of the diamond, all classifications are being located on the edges of the diamond.

In total the full model locates 3 x 36 = 108 qualitatively different descriptions of interpersonal and intrapsychic behaviors. Each point on the full model has a three-digit code number that follows a simple logic. The first or hundreds digit represents focus or surface, with 100 = surface 1 (other), 200 = surface 2 (self), and 300 = surface 3 (introject). The second or tens digit represents the quadrant, with 10 = the right upper one, 20 = the left upper one, 30 = the left lower one and 40 = the right lower one, according to the Cartesian
convention. The third or units digit represents the subdivision of each quadrant and ranges from 0 (= axes) to 8.

In the present research project social interactions between residential care workers and children are studied. Social interactions are represented in the SASB model by the interpersonal behaviors with focus on other and those with focus on self. The introject focus, which represents intrapsychic behaviors, is not taken into account; it is left aside in the further explanation of the SASB model.

![Diagram of the interpersonal surfaces of the 1986 cluster version of the SASB model](image)

**FIGURE 3:** The interpersonal surfaces of the 1986 cluster version of the SASB model. Items from the full model are grouped to form eight SASB clusters per surface. From: Benjamin, L.S. (1987). Use of the SASB dimensional model to develop treatment plans for personality disorders, I: Narcissism. *Journal of personality disorders, 1*, 43-70. © 1986 by the Guilford Press. Reprinted by permission.
The *cluster version* of the SASB model appears in figure 3 and is less complex compared to the full version. In the cluster model adjacent points from the full model are grouped to form eight clusters per surface. The description of a cluster covers the full range of dimensionality of the points that are summarized in that cluster. Each cluster has a two-digit code number. The first number indicates the focus or surface, ranging from 1 to 2. The second indicates the clusters, ranging from 1 to 8, starting at 12 o'clock and proceeding clockwise.

Appendix A presents the descriptions of SASB points at the interpersonal surfaces of the full model and appendix B presents the descriptions of the SASB clusters on the interpersonal surfaces of the cluster model.

The third and simplest version of the SASB model is called the \textit{quadrant model}. The interpersonal surfaces of the quadrant model are presented in figure 4. This version divides each surface into four quadrants that are counterclockwise numbered 1, 2, 3, 4, starting in the upper right-hand corner. The quadrants are defined by the combination of the poles encompassed by the quadrants. For example, quadrant 3 on focus 1 is located between the attack and the control pole and is named \textit{hostile power}.

\subsection*{2.4.3 SASB structural principles}

The structure of the SASB model implies a number of psychological hypotheses. The structural features relate SASB model points or clusters to each other in such a way that behavioral predictions are enabled. The predictive principles can suggest what may have preceded and what may follow a given interpersonal event. Therefore they allow the generation of hypotheses about etiology of social malfunction and about treatment planning. These structural principles include the theoretical concepts of opposition, similarity, complementarity, antitheses, and the principle of Shaurette (Benjamin, 1974, 1984, 1993).

\textbf{Opposition}

Each SASB surface defines opposite behaviors. This principle applies to all versions of the SASB model. On the full model, opposite behaviors are per SASB focus described by points located at 180-degree angles. On the cluster and quadrant models opposite points appear within a certain range of these 180-degree angles. Opposite behaviors have the same attentional focus.

Since the full model has 36 points or classifications on each focus (see figure 1), there are 18 pairs of opposites on each focus. For example, point 115 \textit{friendly listen} is the opposite of point 135 \textit{accuse, blame}.

In the cluster model there are eight clusters on each focus (see figure 3) and therefore four pairs of opposite behaviors. For example, on SASB surface 1 with focus on other cluster 1-2 \textit{affirming and understanding} the opposite of cluster 1-6 \textit{belittling and blaming}, and cluster 1-4 \textit{nurturing and protecting} is the opposite of cluster 1-8 \textit{ignoring and neglecting}. On SASB surface 2 with focus on self, for example cluster 2-1 \textit{asserting and separating} is the opposite of cluster 2-5 \textit{deferring and submitting}.

Finally, in the quadrant model (see figure 4) the opposite quadrant is located at the diagonal. On the first surface, \textit{encourage friendly autonomy} is the opposite of \textit{hostile power}, whereas \textit{friendly influence} is opposite to \textit{invoke hostile autonomy}. On the second surface, \textit{enjoy friendly autonomy} is opposite to \textit{hostile comply}, and \textit{friendly accept} is opposite to \textit{take hostile autonomy}.

Opposite behaviors can define conflicting messages that are sent by one person. If a member of a dyad shows opposite messages in relation to the other person, distorted patterns of communication can be identified.

Opposite communications with focus on other are defined as double-bind communications, representing a paradoxical interpersonal situation to which there is no
appropriate response and from which there is no escape (Bateson, Jackson, Haley, & Weakland, 1956). Opposite communications with focus on self are defined as ambivalence.

**Complementarity**

The SASB model is explicit about how interpersonal behaviors tend to elicit each other by means of the principle of complementarity. Complementary behaviors are likely pairings of interpersonal positions that are often seen within a dyad. So it involves *two persons* and their action-reaction patterns. The principle of complementarity states that if a speaker is focusing on other, there is a strong draw for a listener to react by focus on self with the same amounts of affiliation and interdependence (Benjamin, 1984). In other words, complementarity is defined if members of a dyad are matched in affiliation and interdependence and if both are focused on the same individual. For example, if a boyfriend is focusing on his girlfriend, and she reacts by focusing on herself, they both are focused on her. This shared attentional focus is complementary if they also each show the same amounts of affiliation and interdependence (Benjamin, 1993).

Complementarity is present if a given interpersonal behavior, anywhere on either of the top two surfaces of the SASB model, is matched by a behavior at the same location on the other interpersonal surface. So it indicates correspondence on the affiliation dimension and reciprocity on the interdependence dimension.

This principle of complementarity applies to all versions of the SASB model. In the quadrant model (figure 4), four pairs of complementary behaviors are identified:

- *encourage friendly autonomy to enjoy friendly autonomy*,
- *invoke hostile autonomy to take hostile autonomy*,
- *hostile power to hostile comply*, and
- *friendly influence to friendly accept*.

The cluster model (figure 3) describes eight forms of complementarity:

- cluster 1-1 *freeing and forgetting* to cluster 2-1 *asserting and separating*,
- cluster 1-2 *affirming and understanding* to cluster 2-2 *disclosing and expressing*,
- cluster 1-3 *loving and approaching* to cluster 2-3 *joyfully connecting*,
- cluster 1-4 *nurturing and protecting* to cluster 2-4 *trusting and relying*,
- cluster 1-5 *watching and controlling* to cluster 2-5 *deferring and submitting*,
- cluster 1-6 *belittling and blaming* is cluster 2-6 *sulking and scurrying*,
- cluster 1-7 *attacking and rejecting* to cluster 2-7 *protesting and recoiling*, and finally,
- cluster 1-8 *ignoring and neglecting* to cluster 2-8 *walling off and distancing*.

It should be noted that no causal direction is implied by the complementarity principle. Affirming (1-2) will elicit disclosure (2-2), but disclosure (2-2) will elicit affirming (1-2) as well. Blaming (1-6) pulls for scurrying (2-6), but also scurrying (2-6) pulls for blaming (1-6).

In a comparable way, the full model (figure 1) describes 36 pairs of complementary behaviors. For example, point 116 *carefully, fairly listen* is the complement of point 216 *put cards on the table*.

Henry, Schacht, and Strupp (1986) introduced the concept of positive and negative complementarity. Positive complementarity involves social behaviors on the affiliative sides of the two interpersonal surfaces, whereas negative complementarity refers to the behaviors on the disaffiliative sides.
If two people show complementary behaviors in relationship to each other, it means that those persons have a stable relationship, both with positive and negative complementary behaviors. On the contrary, if two people assume the same interpersonal position at the same time, the relationship is highly unstable. This refers to the principle of similarity.

**Similarity**
If two persons attempt to occupy the same point in interpersonal space, that is if two people are at comparable points but focus both in the same direction (either both on focus 1 or both on focus 2), maximal instability occurs. For example, if two people are trying to control each other (both on cluster 1-5) there is a power struggle. If there are two blamers (both on cluster 1-6), mostly an argument is going on. Even if both member of a dyad are functioning on the affiliative side of the model, there is instability. If both people friendly submit (both on cluster 2-4), the relationship wobbles with uncertainty. Or if there are two affirmers (both on cluster 1-2) and nobody discloses anything to be affirmed, the relationship is unreal and inauthentic.

**Antithesis**
A fourth structural principle of the SASB model is the therapeutic concept of antithesis. If a person shows a type of behavior that is the opposite of what is desired, one can invoke antithesis to try to elicit the desired behavior. Through the principle of complementarity, the antithesis pulls for the opposite of any given position. Antithesis is defined as the opposite to the complement of a specific behavior. This means that every dimension is switched: focus, affiliation, and interdependence.

For example, on the cluster model the antitheses of cluster 2-6 sulking and scurrying is cluster 1-2 affirming and understanding:
- First, take the complement of cluster 2-6 sulking and scurrying. That is cluster 1-6 belittling and blaming.
- Next, take the opposite of this complement. That is cluster 1-2 affirming and understanding.

In case a child is sulking (cluster 2-6) there is a draw for an adult to react by the complement punishing (cluster 1-6). However, by showing the antithesis friendly understanding (cluster 1-2) an adult can try to elicit the desired complementary friendly expressions (cluster 2-2).

Also the principle of antitheses can be applied to all three versions of the SASB model.

**The Shaurette principle**
The SASB model suggests that in a relationship with normal flexibility the chances are optimal that giving the antitheses will draw out the predicted compliment. With more severely disturbed people exceptions to this sequence of behaviors are easily seen. In these cases the principle of Shaurette is recommended (Benjamin, 1984). This principle is named after Glenn Shaurette who developed a technique to direct hospitalized patients stepwise to the desired goal of discharge from the hospital (Benjamin, 1993).
The Shaurette principle involves a sequence of therapeutic behaviors, starting with complementing the undesired hostile behavior of a patient and moving stepwise toward other more desired friendly parts of the interpersonal space. The therapist must proceed in small progressive steps around the SASB model in counterclockwise direction, switching focus as needed.

A simplified example of a sequence of therapeutic behaviors according to the Shaurette principles is: 

- *sulk and appease* (cluster 2-6) to complement a patient's *hostile blaming* behavior,
- move to *deferring and submitting* (cluster 2-5) to elicit the complementary *neutral controlling* patient behavior, switching focus and adding warmth to move to *friendly helping and protecting* (cluster 1-4) in order to elicit the complementary *friendly trusting and relying* patient behavior.

### 2.4.4 Observing and coding

**Videotapes and transcripts**

For observing interpersonal behavior with SASB the behavior of interest must be videotaped or audiorecorded. The SASB coding procedure is too microscopic to be accomplished in real time. Videotapes are preferred to audiotapes since they provide nonverbal information that is helpful in classifying focus, affiliation and interdependence. The preparation of verbatim transcripts of all the videotapes is required. These transcripts are typed according to the principle *who speaks/acts towards whom and what does this person say or do?* A transcript is divided into separate units. A *unit* is an uninterrupted verbal or nonverbal utterance by a speaker or an actor. If an uninterrupted utterance is long it can be broken into more than one unit. With each new speaker or actor a new unit starts. Each unit is divided into elements. An *element* is defined as *a complete thought or a psychologically meaningful verbal or nonverbal interaction*. Each element is coded according to the SASB coding process.

**Process and content coding**

Following the principles of the communication theory of Watzlawick (Watzlawick et al., 1967) the SASB is able to code interpersonal process and interpersonal content independently. Process codings refer to what is being acted out at the moment. They contain information about the relationship aspect of the here and now interaction of the participants, which is expressed both verbally and nonverbally. Each element must be given a process code. In addition, an element can be given a content code. Content codings refer to what is being talked about. This means that the literal meaning of the words is coded. In this respect only interpersonal content of an utterance is relevant: the statement has to contain information about two persons relating to or interacting with each other. An example of a statement with interpersonal content is when a client tells to the therapist that her mother mostly was angry at her father.
The coding process
The coding process is based on the cluster version of the SASB model. It is important to realize that when classifying social behaviors in terms of the SASB model one does not scan all $3 \times 8 = 24$ clusters to pick the one that fits best. The method consists of a sequence of three decisions, that is focus, affiliation and interdependence. The combination of the ratings on these three dimension, which are assumed to form the basic structure of social interaction, results in a category or cluster on the SASB model.

Before the actual coding starts the coders first have to watch the videotape or listen the audiotape once to get a thorough understanding of the interaction to be coded. Next a list of referents has to be completed. The referents are the participants of the interaction plus important absent persons or concepts that are talked about.

The transcripts are coded element by element and each coding decision has to be entered on a coding sheet. The SASB coding procedure is a process with several steps in chronological order. The coding process is as follows (Benjamin et al., 1981; Benjamin, Foster, Giat-Roberto, & Estroff, 1986; Grawe-Gerber & Benjamin, 1989):

- Designate who is the speaker.
- Consider whether there is a process or content coding. Each element must have a process code and gets this code first. An element can get an interpersonal content code, but this is not imperative.
- Identify the X referent and the Y referent. The X referent is the initiator or actor; in case of process coding the X referent and the speaker are the same person. The Y referent is the receiver of the message.
- Decide on the focus: other (coded as 1), self (coded as 2) or introject (coded as 3).
- Determine the degree of affiliation on the horizontal scale (-9 to +9). This decision is made on the basis of a combination of both verbal and nonverbal signs, such as choice of words, facial expression, and tone of voice.
- Determine the degree of interdependence on the vertical scale (-9 to +9). This decision is made on the basis of a combination of both verbal and nonverbal signs, such as wording, physical movements and gestures, intonation and loudness.
- Combine the judgements on focus, affiliation and interdependence in order to identify the SASB cluster. The judgement on focus indicates on which surface the final cluster will be find. The ratings on the horizontal and the vertical dimensions result in a point $(x, y)$ on the SASB diagram. Drawing a line from the center through this point, the point where this line intersects the border of the diamond constitutes the SASB cluster.
- Determine whether the selected SASB cluster accurately describes the coded interaction by means of a global judgement check. Benjamin calls this the final clinical test. Hereby the coder has to use the descriptions of the SASB clusters, as presented in appendix B. The coder has to read aloud the description of the selected SASB cluster and determine whether this description is a good representation of the element just coded. If this fails, the coder should go through the whole coding procedure again or should consider a complex code (as described below).

An element is uncodable in case the X or Y referent can not be identified or in case one or more of the three basic SASB dimensions can not be determined. It is coded as a missing value ‘99’.
Complex messages
SASB can explore complex communication. Complex communication means that there is more than one SASB cluster needed to describe the process or the content of an element and the different aspects can not be extracted as clearly discernible messages. The messages are entangled.

2.4.5 Applications of the SASB model

The SASB can be used for research as well as for clinical applications. It is not only an observational system. The 108 distinct behaviors on the SASB full model and also the 24 clusters on the SASB cluster version have been phrased into questionnaires (Benjamin, 1974, 1979b, 1988). These can be used as self-report measures and permit measurement of the subject's perceptions of his or her relationships with other people.

The application of SASB, as a research instrument as well as a clinical tool was at first demonstrated by Benjamin through case studies. An example is the description of the interpersonal problems of a patient who attempted suicide (Benjamin, 1982). Later on scientific researchers started using the SASB as a research instrument in projects with a broad range, among others the following. Benjamin et. al (1986) studied family interactions. Humphrey, Apple and Kirschenbaum (1986) used SASB to differentiate bulimic-anorexic families from normal families. Berlin and Johnson (1989) focused on women and autonomy. Henry, Schacht and Strupp (1986, 1990) differentiated between therapies with a good and a poor outcome case. Recently, SASB is used frequently as a common metric for programmatic psychopathology and psychotherapy research (Henry, 1996).

In clinical settings the SASB is mostly used in psychodynamic therapies. The SASB structural principles (Introjection, Complementarity, Antithesis, and Shaurette) are used to make predictions about a subject’s behavior and to guide therapeutically interventions. Via the principle of complementarity inferences are made about antecedent and consequent social behaviors of a particular social behavior of a subject. Via the principle of introjection inferences are made about the impact of experienced social events on the subject’s self concept. Via the principles of antithesis and of Shaurette inferences are made about what to do to optimize the possible changes in a subject’s social behavior. Benjamin also presents the SASB as a diagnostic instrument for interpersonal diagnoses. This refers to a procedure of adding social and intrapsychic descriptors to the traditional psychiatric classifications, presented in the Diagnostic and Statistical Manual of Mental Disorders, DSM-III-R (American Psychiatric Association, 1987) and DSM-IV (American Psychiatric Association, 1994), especially to the personality disorders (Benjamin, 1993).
2.5 An additional research question

As the use of the SASB is novel with respect to describing the care process in a residential treatment setting for children in the Netherlands, an additional research question reads:

- *Is the SASB model a reliable, valid, and time-efficient method to operationalize social interaction patterns in a Dutch residential treatment center for children? Is it clinically useful?*

The answer to this secondary research question will be presented as part of the discussion in the present empirical study.

In the next chapter the method of the empirical study is described.